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ABSTRACT

A study focused on the background factors that are most closely related to reading instruction and reading performance, including instructional approaches, reading experiences, home influences, and demographic characteristics. Data for these assessments were collected in the spring of 1988 and 1990 from a nationally representative sample of approximately 13,000 students in 1988 and 25,000 students in 1990 at grades 4, 8, and 12 attending public and private schools. The measurement of achievement included in this study is students' average reading performance on a scale of 0 to 500 that allows for direct comparison across the grades and among subgroups of the population assessed. This scale differs from the National Assessment of Educational Progress (NAEP) reading scale data and are not comparable to the 1988 and 1990 reading results. Major findings of the assessment were: (1) the amount of reading that students do in and out of school was positively related to their reading achievement, yet students report relatively little reading in or out of school; (2) students who reported home environments that fostered reading had higher reading achievement; (3) despite extensive research suggesting that effective reading instruction includes moving from an emphasis on workbooks to combining reading and writing activities, schools were slow to make the transition; (4) students demonstrated difficulty in providing details and arguments to support interpretations of what they read; and (5) frequency of library use in 1990 appeared to decrease as grade level increased. (Twenty-one tables, two figures of data, and a "procedural appendix" are included. A separate data summary of the 1990 assessment, prepared by Eugene Owen, is appended.

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READING IN AND OUT OF SCHOOL

Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990

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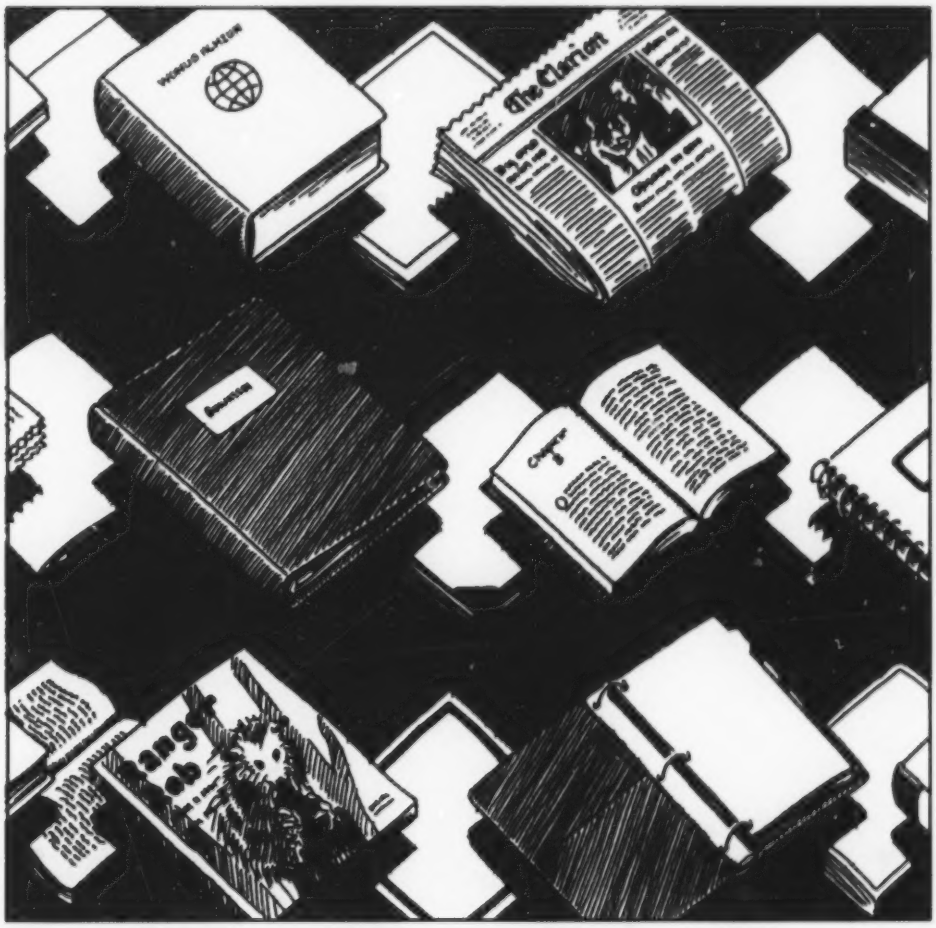

by Mary A. Foertsch

May 1992

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INTRODUCTION

BACKGROUND

This report from the National Assessment of Educational Progress (NAEP) is based primarily on a reading assessment of fourth-, eighth-, and twelfth-grade students conducted in 1990. As part of the assessment, students were asked a variety of questions about their reading instruction and reading habits. The report focuses on those background factors that are most closely related to reading instruction and reading performance, including instructional approaches, reading experiences, home influences, and demographic characteristics. Also, the 1990 reading assessment contained components in common with a 1988 reading assessment conducted by NAEP, and this permits some comparisons between data for the two assessments.

The reading assessments that form the basis for this report differ from those whose results were reported in the publication entitled *Trends in Academic Progress*.[1] That report, based on six reading assessments of 9-, 13-, and 17-year-olds conducted at regular intervals from 1971 to 1990, includes data on trends in reading performance. The data were reported on the NAEP reading scale, which describes various levels of performance. The trend assessments, based on procedures established in the early 1970s, do not vary much from administration to administration in order to ensure that the data reflect changes in student performance rather than changes in the assessment instrument.

In contrast, the assessments discussed in this report were based on an updated interactive view of reading in which factors related to the text, the situation, and the reader influence reading comprehension. In this view, comprehension may be influenced by the type of material being read; the purposes or goals for reading; and the characteristics of readers, including their attitudes, knowledge, and understandings, and their ability

[1] I. Mullis, J. Dossey, M. Foertsch, L. Jones, and C. Gentile, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969-80 to 1990; Mathematics, 1973 to 1990; Reading, 1971 to 1990; and Writing, 1984 to 1990* (Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1991).

to use the reading strategies needed to achieve comprehension.[2] Also, the student background questions in the 1988 and 1990 assessments discussed herein focused more extensively on students' instructional activities, as well as on a greater variety of reading experiences in the home and at school than was the case for the trend assessments.

For the 1988 and 1990 reading assessments, NAEP addressed the issues of what to assess and how to do so through a consensus process involving curriculum specialists, teachers, school administrators, researchers, parents, concerned citizens, public officials, and business leaders. An Assessment Development Panel and an Item Development Panel were involved in the planning and development of the assessments. Information about students' performance is based on their responses to a wide range of reading materials, including literary and informational passages covering a number of subject areas. The passages varied in length from brief selections on a single concept to complex passages about specialized topics in science or social studies. The selections included stories and poems as well as essays and reports, material typical of that found in classrooms, and examples of documents such as advertisements and magazine subscription forms.

NAEP assessed comprehension of the passages primarily by multiple-choice questions asking students to identify basic information and to compare and contrast information. However, the assessment also included several constructed-response questions asking students to interpret and explain what they had read.

THE 1992 NAEP READING ASSESSMENT

Beginning in 1990, a significant new component was added to NAEP whereby states, on a voluntary basis, could participate in a trial program to obtain data that allowed state-to-nation and state-to-state comparisons. For 1990 the trial program was concentrated on eighth-grade mathematics. In 1992, however, the trial state program included reading at the fourth grade.

Thus, in every attempt to conduct a 1992 reading assessment that would meet the needs of states, NAEP replaced the 1988 and 1990 assessments with a completely new, innovative assessment more consistent with contemporary knowledge about reading and more relevant to the needs of education decision makers.

To prepare a wholly new Framework for the 1992 assessment,[3] the National Assessment Governing Board (NAGB) awarded a contract to the Council of Chief State School Officers (CCSSO). The elaborate consensus process provided for overall guidance by

[2] *NAEP Reading Objectives for the 1990 Assessment* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1990). *NAEP Reading Objectives for the 1986 and 1988 Assessments* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1988).

[3] *Reading Framework for the 1992 National Assessment of Educational Progress* (Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, 1992).

a Steering Committee that consisted of members representing 16 national organizations. A 15-member Planning Committee of reading educators worked with the CCSSO staff to develop the Framework and specifications for the assessment. Throughout the development effort, advice was continually sought from a wide range of individuals in the fields of reading and assessment.

The 1992 NAEP reading assessment incorporates a variety of assessment approaches, both conventional and innovative. It examines students' abilities to construct, extend, and examine the meaning of what they read. Performance is assessed in different reading situations — reading for literary experience, reading to be informed, and reading to perform a task — by using relatively long, authentic, "real-life" texts. A majority of the questions require students to construct written answers, and special studies are included. One set of questions permits students in grades 8 and 12 to choose a story to read from a collection of different short stories. At grade 4, interviews are used to examine other aspects of reading, including fluency in reading aloud, independent reading habits, and classroom work in reading. The assessment was conducted in January through April of 1992, and the results will be available in mid-1993.

ORIENTATION TO THIS REPORT The results in *Reading In and Out of School* are based on nationally representative samples of approximately 13,000 students in 1988 and 25,000 students in 1990 at grades 4, 8, and 12 attending public and private schools. NAEP presents information on the performance of groups of students, not individuals. The measure of achievement included in this report is students' average reading performance on a 0 to 500 scale that allows for direct comparisons across the grades and among subgroups of the population assessed. This scale, however, differs from the NAEP reading scale and descriptive anchor levels used to report trends in reading performance. Thus, the 1988 and 1990 data in this report are not comparable to the 1988 and 1990 reading results contained in the trend report.

Reporting trends in reading achievement is not the primary purpose of this report. That information is more appropriately gained from *Trends in Academic Progress*, which presents the long-term view across nearly two decades. Changes in educational achievement across only two years are often difficult to interpret because they may represent fluctuations or the beginning of trends, and it is sometimes nearly impossible to make the distinction.

The results in this report make it possible to examine the relationships between student reading achievement and various background factors, relating reading performance to one or several variables at a time. As with other more recent NAEP assessments,

the selection of background questions was guided by the wide body of available research about factors influencing student learning. Thus, the results can help confirm our understanding of how school and home factors relate to achievement. They can also be used to describe where we stand in relation to classroom use of the instructional approaches shown by research to be effective. These analyses, however, do not reveal the underlying causes of the relationships between background factors and performance. Therefore, the NAEP assessment results are most useful when they are considered in light of other knowledge about the educational system, such as trends in instruction, the school-age population, and societal demands and expectations.[4]

Finally, it should be noted that like all estimates based on surveys, the NAEP results are subject to sampling error as well as measurement error. NAEP computes standard errors using a complex procedure that estimates the sampling error and random error associated with the observed assessment results. The standard errors indicated in the tables in this report were used to construct approximately 95 percent confidence intervals around the estimated results. Thus, it can be said with approximately 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Differences in average proficiency or percentages of students were determined to be statistically significant at the .05 level using an application of the Bonferroni procedure. More detailed information on the Bonferroni method can be found in the Procedural Appendix. An overview of the procedures used in NAEP's 1988 and 1990 reading assessments, as well as definitions of student subpopulations, also can be found in the Procedural Appendix.

MAJOR FINDINGS

- The amount of reading that students do for school is positively related to their reading achievement. Yet, students report relatively little reading for school.

  - At all three grades, students who reported reading more pages each day for school and homework had higher average reading achievement. Yet in 1990, 45 percent of the fourth graders, 63 percent of the eighth graders, and 59 percent of the twelfth graders reported reading 10 or fewer pages each day. Also, students reported somewhat less daily reading than in 1988.

[4] Further information about the relationship between home and school factors can be found in J. Chall, V. Jacobs, and L. Baldwin, *The Reading Crisis: Why Poor Children Fall Behind* (Cambridge, MA: Harvard University Press, 1990). [See review in *Contemporary Psychology*, 1991, 36, 849-850 by C. Juel.] Also, L. Snow, W. Barnes, J. Chandler, I. Goodman, and L. Hemphill, *Unfulfilled Expectations: Home and School Influences on Literacy* (Cambridge, MA: Harvard University Press, 1992). [See reviews by M. Pressley and B. Palmer, *Contemporary Psychology, 37*, 1992: 18-19, and J. Hodgson, *Applied Psycholinguistics*, 12, 1992: 515-522].

- Twelfth graders who reported more frequent reading of textbooks to complete assignments had higher proficiency. About three-fourths (78 percent) reported doing such reading on a daily basis and about one-tenth (8 percent) said they did so monthly or less often.

- Twelfth graders who reported more frequent reading of novels, poems, or stories for their school assignments had higher proficiency. About one-fourth reported reading these types of materials each day, but 44 percent said they did such reading for school assignments only monthly or even less frequently.

- The amount of reading that students do out of school is positively related to their reading achievement. Yet, students report relatively little reading out of school.

  - Across all three grades, students who reported more frequent reading outside of school had higher average proficiency. In 1990, 43 percent of the fourth graders, 40 percent of the eighth graders, and 39 percent of the twelfth graders reported daily reading outside of school. Compared to 1988, fourth graders reported less reading outside of school, while eighth and twelfth graders reported more.

  - Eighth and twelfth graders who reported reading for fun in their spare time had higher average achievement. However, 29 to 30 percent reported that they never read for fun in their spare time, and these figures represented significant increases compared to student reports in 1988. Thus, it appears that the increases in reading outside of school reported by these students is not related to leisure reading.

  - Particularly at grade 12, students who reported more homework had higher average reading achievement. However, in 1990, 22 percent of the twelfth graders (somewhat more than in 1988) said they either did not have homework assigned or did not do it.

- Students who reported more home support for literacy had higher average reading achievement.

  - At all three grades, students who reported more reading materials in the home had higher average reading achievement. About 5 percent reported not having 25 books in their home and approximately 15 to 25 percent reported not getting magazines or a newspaper regularly or having an encyclopedia. Students reported somewhat less access to reading materials in the home in 1990 than in 1988.

- Eighth and twelfth graders who lived with adults who read frequently had higher average reading achievement. However, less than one-half reported that the adults in their home read "a lot."

- At all three grades, students who reported talking about their readings with their friends and families on at least a monthly basis had higher average reading achievement. About one-fourth of the students reported never having such discussions or doing so only yearly.

- Students who reported watching more television had lower average reading achievement. In 1990, 62 percent of the fourth graders reported watching three or more hours of television each day (25 percent of these watched six hours or more). Sixty-four percent of the eighth graders and 40 percent of the twelfth graders reported three or more hours of daily viewing. Students did report some reduction in the amount of television watched compared to 1988.

- Despite extensive research suggesting that effective reading instruction includes moving from an overwhelming emphasis on workbooks toward more opportunities for combining reading and writing activities, implementing such recommendations appears to be an extremely slow process.

  - When asked about the activities their teachers used in conjunction with their reading, students reported workbooks as a very prevalent approach. Forty-four percent of the fourth graders and about one-fourth of the eighth and twelfth graders reported working in their workbooks on a daily basis. Reading achievement did not vary according to frequency of workbook assignments.

  - About half of the fourth graders reported writing about their reading in a journal on at least a weekly basis, compared to 28 to 29 percent of the eighth and twelfth graders who reported journal writing this often. The fourth graders who reported either the most frequent (daily) or the least frequent journal writing (never) had lower average reading achievement than their classmates who reported a moderate amount of journal writing. At grades 8 and 12, only about 10 percent of the students reported daily journal writing, but they had lower average achievement. Teachers may be giving the poorer readers more frequent short assignments or asking them to do more writing in an effort to help improve their reading skills.

- Eighth and twelfth graders who reported a moderate amount of report writing about their reading — weekly or monthly — had higher average reading achievement than those who reported either extreme. About one-third said that they never wrote reports or did so infrequently.

- Students who reported discussing their reading had higher average reading achievement than students who reported never having this opportunity. Across the three grades, 51 to 64 percent of the students said they were asked by their teachers to talk about what they read on a weekly basis or more often. However, one-fifth to one-third said they never talked about their reading.

- Students at all three grade levels demonstrated difficulty in constructing thoughtful responses to questions asking them to elaborate upon or defend their interpretations of what they read. The majority of students' constructed responses indicated a very general understanding of what was read, but failed to provide the details and arguments necessary to support their interpretations.

- The frequency of library use in 1990 appeared to decrease as grade level increased. Two-thirds of the fourth graders said they used the library at least weekly, compared to one-fourth of the eighth graders and 10 percent of the twelfth graders. Most of the eighth graders said they went to the library on a monthly basis and most twelfth graders reported only yearly use of the library.

C H A P T E R O N E

STUDENTS' READING EXPERIENCES IN SCHOOL

The ability to read thoughtfully, a hallmark of literacy,[5] can be encouraged and developed through effective classroom instruction. Researchers have found that in order for instruction to be most effective, subject matter, teaching materials and activities, and the instructional context must be carefully orchestrated to create a meaningful and motivating learning experience.[6] Varied and meaningful tasks can stimulate students' interest and level of involvement in their work, and ultimately affect their achievement.[7] The instructional activities that students engage in can also shape how they view reading,[8] and consequently, their development of certain skills and strategies. Thus, the selection of activities used as a part of reading instruction is crucial to students' achievement in reading. In collecting background information for the 1990 assessment, students were asked about the instructional materials used in their

[5] S.G. Paris, B.A. Wasik, and J.C. Turner, "The Development of Strategic Readers," in R. Barr, M. Kamil, P. Mosenthal, and P. David Pearson, eds., *The Handbook of Reading Research: Volume II* (New York: Longman, 1991).

[6] J.I. Goodlad, *A Place Called School: Prospects for the Future* (New York, NY: McGraw-Hill, 1984).

[7] P. Blumenfield and J. Meece, "Task Factors, Teacher Behavior and Students' Involvement and Use of Learning Strategies in Science," *Elementary School Journal, 88*, 235-250. S. Rosenholtz and B. Wilson, "The effect of classroom structure on shared perceptions of ability," *American Educational Research Journal, 17*, 75-82.

[8] J.A. Dole, G.G. Duffy, L.R. Roehler, and P. David Pearson, "Moving From the Old to the New: Research in Reading Comprehension Instruction," *Review of Educational Research* 61 (1991): 239-264.

classrooms as well as about the amount of emphasis given to various instructional activities involving classroom discussion, writing, and the use of strategies and purposes for reading.

INSTRUCTIONAL ACTIVITIES Teachers can nurture students' reading comprehension ability by providing instructional activities that prepare students for a wide variety of specific reading tasks.[9] For example, teachers can ask students to discuss what they have read, write a paper or report, or make predictions about what they are reading. These activities support students' understanding of the text being read and model the ways in which students can control the process of building meaning when reading on their own. Questions included in the 1990 NAEP reading assessment asked students the extent to which their teachers asked them to engage in discussion-related activities, written activities, activities involving specific purposes and strategies for reading, and self-selection of reading materials.

Classroom discussion. Discussion-related activities are an important part of classroom learning because they provide opportunities for students to ask questions about things they do not understand or want to know more about.[10] TABLE 1.1 summarizes students' reports of instructional activities involving discussion, and the average reading proficiency scores of students giving different responses to questions about these instructional activities. Not all questions were asked of the fourth graders.

Overall, the results indicate that the majority of the students surveyed engaged in some form of discussion-related activity as a part of classroom instruction on a weekly basis or more often. These results, however, were accompanied by reports indicating that one-fourth of the fourth graders, one-fifth of the eighth graders, and one-tenth of the twelfth graders were never asked by their teachers to discuss their readings. At grades 8 and 12, students reported more discussion emphasis on vocabulary than on explaining their understanding or interpretations of what they had read. At both grades, about two-thirds of the students reported discussing new and difficult vocabulary weekly or even more often. About half reported being asked to explain their understanding or to discuss different interpretations this frequently.

In general, eighth- and twelfth-grade students who reported more frequent class discussion had higher average reading achievement. For example, twelfth graders who reported being asked by their teachers to discuss their readings weekly or more often and eighth graders who reported discussing their readings on at least a monthly basis had

[9] S.G. Paris, "Teaching Children to Guide Their Reading and Learning," in T.E. Raphael, ed., *The Contexts of School-Based Literacy* (New York, NY: Random House, 1984), pp. 115-30.

[10] J. Moffett and B. Wagner, "Student Centered Reading Activities," *English Journal*, 80, 1991.

TABLE 1.1

Discussion Activities Related to Reading Instruction, 1990

How often does your teacher ask you to. . .	Grade		Daily	Weekly	Monthly	Few Times or Yearly	Never
talk about what you read?	4	Percent	25 (0.8)	28 (0.6)	15 (0.7)	8 (0.4)	25 (0.6)
		Proficiency	232 (1.4)	235 (1.2)	242 (1.7)	236 (2.2)	229 (1.6)
	8	Percent	22 (0.9)	29 (0.7)	19 (0.7)	10 (0.5)	20 (0.7)
		Proficiency	267 (1.5)	266 (1.3)	264 (1.2)	256 (2.0)	245 (1.2)
	12	Percent	32 (1.0)	32 (0.6)	16 (0.5)	9 (0.4)	12 (0.7)
		Proficiency	300 (1.0)	291 (1.3)	284 (1.3)	278 (1.5)	269 (1.8)
participate in a group activity or project about reading?	4	Percent	8 (0.4)	17 (0.6)	28 (0.7)	18 (0.7)	29 (0.7)
		Proficiency	207 (2.3)	222 (1.3)	241 (1.3)	247 (1.5)	235 (1.4)
	8	Percent	4 (0.3)	13 (0.6)	31 (0.8)	27 (0.8)	24 (1.1)
		Proficiency	238 (3.2)	251 (2.0)	262 (1.3)	270 (1.1)	259 (1.5)
	12	Percent	4 (0.4)	16 (0.8)	31 (0.8)	30 (0.8)	19 (0.8)
		Proficiency	275 (3.2)	285 (1.8)	291 (1.3)	293 (1.2)	284 (1.4)
discuss new and difficult vocabulary?	8	Percent	25 (0.8)	43 (0.9)	16 (0.7)	7 (0.5)	9 (0.4)
		Proficiency	263 (1.5)	266 (1.1)	259 (1.7)	252 (2.8)	240 (1.9)
	12	Percent	21 (0.7)	42 (1.1)	18 (0.6)	9 (0.4)	10 (0.6)
		Proficiency	290 (1.4)	293 (1.1)	289 (1.2)	282 (1.9)	274 (2.3)
explain your understanding?	8	Percent	19 (0.7)	30 (0.7)	26 (0.6)	13 (0.6)	13 (0.5)
		Proficiency	262 (1.7)	266 (1.3)	260 (1.3)	262 (1.3)	250 (2.0)
	12	Percent	23 (0.9)	34 (0.7)	25 (0.8)	11 (0.5)	7 (0.6)
		Proficiency	297 (1.5)	291 (1.2)	288 (1.1)	281 (1.3)	266 (2.0)
discuss different interpretations?	8	Percent	13 (0.7)	27 (0.8)	25 (0.6)	14 (0.6)	20 (0.7)
		Proficiency	264 (2.0)	262 (1.3)	264 (1.3)	263 (1.6)	255 (1.5)
	12	Percent	21 (0.8)	30 (0.7)	24 (0.7)	13 (0.6)	12 (0.8)
		Proficiency	298 (1.6)	291 (1.3)	288 (1.2)	285 (1.5)	273 (1.5)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

significantly higher proficiencies than those who said they did so less often. Also, students at both grade levels who said their teachers asked them to engage in vocabulary discussions on at least a monthly basis performed better than those who reported being asked to do so less often, and those who reported being asked to explain their understanding and discuss different interpretations of what they had read had higher proficiencies than those who reported never doing so.

Nearly half of the students at each grade level — 47 percent at grade 4, 51 percent at grade 8, and 49 percent at grade 12 — reported being asked by their teachers to engage in group activities or projects only yearly or never. At all three grades, those students who reported such work about their reading on a daily basis had the lowest average reading achievement, while those who reported such work monthly or several times a year were among the highest performers. Students never engaging in group activities or projects had lower average proficiency than students who sometimes did these activities. The underlying reasons for these results cannot be determined from the data and alternative interpretations are possible. For example, the results may indicate an effort by teachers to encourage the poorer readers through collaborative learning and projects. Conversely, they might indicate that the less able readers are being given less substantive activities.

Written activities and reading. Written activities can provide valuable reading-related experiences, because they encourage students to rethink what they know and to formulate new ideas.[11] Classroom activities that can emphasize the connection between reading and writing include report and journal writing and workbook assignments. The nature of the activity or task, the purpose for which it is being used, and the individual approach of the learner determine the type and amount of thinking in which students will engage.[12] For example, writing a critical evaluation of the theme of a story seems more likely to involve the integration and manipulation of ideas than completing a workbook assignment by filling in the blanks with words from a list. Nevertheless, as shown in TABLE 1.2, students reported more frequent attention to workbooks than they did to either journal writing or producing written reports.

The results indicate that, as in the past,[13] teachers rely heavily on workbooks as an instructional tool in reading. The majority of students across grade levels reported being asked by their teachers to complete workbook activities on at least a weekly basis.

[11] L. Fielding, P. Wilson, and R.C. Anderson. "A New Focus on Free Reading: The Role of Trade Books in Reading Instruction," in Taffy E. Raphael, ed., *The Contexts of School-Based Literacy* (New York, NY: Random House, 1986).

[12] R. Tierney and T. Shanahan. "Research on the Reading-Writing Relationship: Interactions; Transactions; and Outcomes," in R. Barr, M. Kamil, P. Mosenthal, and P. David Pearson, eds., *Handbook of Reading Research, Volume II* (New York, NY: Longman, 1991).

[13] J. Langer, A. Applebee, I. Mullis, and M. Foertsch, *Learning to Read in Our Nation's Schools*, (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

TABLE 1.2

Written Activities Related to Reading, 1990

How often does your teacher ask you to. . .	Grade		Daily	Weekly	Monthly	Few Times or Yearly	Never
work in a workbook after reading?	4	Percent	44 (0.9)	29 (0.8)	11 (0.5)	5 (0.4)	11 (0.6)
		Proficiency	233 (1.3)	238 (1.3)	236 (2.3)	230 (3.1)	225 (1.8)
	8	Percent	28 (0.8)	37 (0.7)	18 (0.6)	7 (0.4)	10 (0.5)
		Proficiency	259 (1.1)	264 (1.2)	264 (1.4)	261 (2.9)	247 (2.4)
	12	Percent	20 (0.7)	38 (0.6)	22 (0.7)	10 (0.7)	11 (0.4)
		Proficiency	287 (1.4)	290 (1.0)	290 (1.3)	292 (2.3)	285 (2.4)
write in a journal about what you have read?	4	Percent	18 (0.7)	30 (0.7)	27 (0.8)	11 (0.6)	15 (0.6)
		Proficiency	221 (1.8)	235 (1.1)	243 (1.4)	240 (1.7)	228 (1.9)
	8	Percent	11 (0.7)	18 (1.2)	20 (0.6)	15 (0.5)	36 (1.4)
		Proficiency	253 (1.9)	258 (2.0)	259 (1.8)	263 (1.2)	265 (1.3)
	12	Percent	10 (0.6)	18 (0.7)	21 (0.8)	17 (0.6)	34 (1.2)
		Proficiency	282 (1.6)	286 (1.8)	284 (1.5)	293 (1.4)	293 (1.2)
write a report about what you have read?	8	Percent	5 (0.3)	15 (0.5)	41 (0.9)	27 (1.0)	12 (0.6)
		Proficiency	240 (3.2)	252 (1.5)	265 (1.1)	269 (1.2)	249 (2.4)
	12	Percent	5 (0.4)	20 (1.0)	42 (0.8)	24 (1.1)	9 (0.6)
		Proficiency	275 (2.7)	289 (1.6)	292 (1.1)	291 (1.3)	278 (2.1)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

Both workbook assignments and journal writing appear to be more prevalent at grade 4 than at grades 8 and 12. Yet, three-fourths of the fourth graders reported daily or weekly workbook assignments compared to about half who reported daily or weekly journal writing. About two-thirds of the eighth graders and more than one-half of the twelfth graders reported working in their workbooks at least weekly, whereas 28 to 29 percent reported being asked to write about what they had read in a journal this often.

At grades 8 and 12, 20 to 25 percent of the students reported writing reports about their reading weekly or more often, 41 to 42 percent reported this as a monthly activity, and the remaining one-third or so said that they never wrote reports or did so very infrequently (a few times or once a year).

With the exception of lower performance by the 10 percent of eighth graders who reported never doing workbook assignments, achievement was at about the same level regardless of the frequency of such assignments.

At grade 4, the students who reported either the most frequent (daily) or the least frequent journal writing (never) had lower average reading achievement than their classmates. At grades 8 and 12, students who reported daily journal writing had lower average proficiency than those who reported this as an infrequent activity (yearly or never). In some sense, these findings parallel the relationships between reading achievement and group or project work discussed in the previous section. The association between lower proficiency and daily journal writing may be attributed at least in part to teachers asking less proficient readers to engage in these activities often in an effort to strengthen students' reading and writing skills.

Eighth and twelfth graders who reported a moderate amount of report writing about their reading — weekly, monthly, or a few times a year — had higher average reading achievement than those who reported either extreme. It may be that for poorer readers, teachers tend either to give more short assignments or fewer longer assignments. The practice of giving a greater number of short assignments to lower-achieving students was found in previous writing assessments.[14]

Reading purposes and strategies. Students develop a range of strategies that allows them to not only understand the meaning of what they read, but reason effectively and extend their understanding of information, concepts, and themes that are implicit in text.[15] Skilled readers manage the reading experience by selecting those strategies most appropriate for a particular situation. For example, students may study a textbook carefully to remember information or browse through a newspaper for an interesting headline. Proficient readers know that if a particular strategy does not seem to be working, they should select another. In 1990, NAEP asked twelfth-grade students how often their teachers asked them to read for the purpose of getting new information, make predictions when reading, and demonstrate their use of reading skills. Twelfth graders' responses to these questions and their reading proficiency are displayed in TABLE 1.3.

Few (approximately 10 percent) of the twelfth graders said they were asked daily by their teachers to make predictions based on what they read, to read for the purpose of

[14] A. Applebee, J. Langer, L. Jenkins, I. Mullis, and M. Foertsch, *Learning to Write in Our Nation's Schools*, (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

[15] S.G. Paris, B. A. Waskik, and J. C. Turner, "The Development of Strategic Readers," in R. Barr, M. Kamil, P. Mosenthal, and P. David Pearson, eds., *Handbook of Reading Research: Volume II* (New York, NY: Longman, 1991), pp. 609-40.

TABLE 1.3
Instructional Activties Related to Twelfth Graders' Purpose for Reading and Use of Skills, 1990

How often does your teacher ask you to. . .		Daily	Weekly	Monthly	Few Times or Yearly	Never
predict what you find when you read?	Percent	10 (0.5)	25 (0.6)	26 (0.5)	17 (0.5)	22 (0.7)
	Proficiency	289 (2.0)	288 (1.3)	291 (1.3)	290 (1.4)	287 (1.4)
get new information?	Percent	10 (0.4)	24 (0.7)	30 (0.6)	18 (0.5)	19 (0.6)
	Proficiency	284 (1.8)	288 (1.3)	291 (1.3)	292 (1.3)	287 (1.4)
show how to use reading skills?	Percent	11 (0.4)	17 (0.6)	25 (0.6)	24 (0.6)	23 (0.7)
	Proficiency	280 (2.2)	285 (1.5)	289 (1.1)	297 (1.2)	288 (1.6)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

acquiring new information, or to read to show how to use reading skills. However, approximately half of the twelfth-grade students reported being asked to engage in each type of activity either weekly or monthly. There was little variation in average reading achievement associated with the frequency with which students engaged in these activities.

INSTRUCTIONAL MATERIALS IN SCHOOL When students encounter a variety of texts, they expand their general understanding of language, as well as their understanding of text and its underlying structures.[16] TABLE 1.4 summarizes twelfth graders' reports of how often in 1990 they read various materials for assignments.

High-school seniors reported frequent reading of textbooks for their school assignments. Most — 92 percent — said that their teachers assigned reading from a textbook at least weekly, with 78 percent of those reporting such assignments on a daily basis. Assignments based on novels, poems, or stories were reported as less frequent, although the majority of the twelfth graders said they read these types of materials for school weekly or more often. Nearly one-half also reported using a dictionary or encyclopedia for school assignments on at least a weekly basis. School assignments based on reading newspapers or magazine articles were not as prevalent, with 39 percent of the students reporting such activities at least weekly.

[16] A. Applebee, J. Langer, and I. Mullis, *Who Reads Best?* (Princeton, NJ: National Assessment of Educational Progress, Educational Testing Service, 1988).

TABLE 1.4

Twelfth-Grade Students' Reports of Reading for Assignments, 1990

How often do you read the following for an assignment?		FREQUENCY OF READING				
		Daily	Weekly	Monthly	Yearly	Never
Textbook	Percent	78 (0.8)	14 (0.6)	4 (0.3)	2 (0.2)	2 (0.2)
	Proficiency	293 (0.9)	282 (1.9)	272 (2.9)	260 (4.1)	248 (4.8)
Newspaper or Magazine Article	Percent	9 (0.5)	30 (1.1)	33 (0.9)	21 (0.8)	8 (0.4)
	Proficiency	278 (2.2)	288 (1.2)	294 (1.2)	293 (1.4)	277 (2.0)
Novel, Poem or Story	Percent	26 (0.9)	29 (0.9)	26 (0.8)	12 (0.4)	6 (0.6)
	Proficiency	300 (1.4)	290 (1.4)	287 (1.2)	284 (1.8)	266 (2.1)
Dictionary or Encyclopedia	Percent	13 (0.5)	33 (0.9)	32 (0.9)	17 (0.5)	5 (0.4)
	Proficiency	284 (1.4)	291 (1.3)	294 (1.2)	289 (1.5)	266 (2.9)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

In general, twelfth graders who reported more reading of textbooks or novels/stories for their school assignments had higher average reading achievement. For example, the vast majority of the students who reported at least weekly assignments related to their textbooks had higher average proficiency than the few (8 percent) who reported such assignments only monthly or even less frequently. Also, students who reported daily assignments associated with novels, poems, or stories had higher average reading achievement than their counterparts who did so less often. Use of reference materials like the dictionary or encyclopedia showed less relationship with reading achievement, although the 5 percent reporting "never" had lower average reading achievement than those who reported using reference materials. Fewer than 10 percent of the twelfth graders reported school assignments based on newspapers or magazines as either a very frequent (daily) or infrequent (never) activity. Those who reported such assignments at the extremes — daily or not at all — had lower average proficiency than students who reported reading such materials for school on a moderate basis. The pattern of students never reading such materials for school having lower proficiency is consistent with the results for the other types of reading asked about, although the results for daily school-related reading of newspapers and magazines is not. For some poorer readers, teachers may be supplementing their textbooks with such materials.

AMOUNT OF READING COMPLETED FOR SCHOOL, 1988 AND 1990

In addition to the results about textbook assignments presented in TABLE 1.4, twelfth-grade students in previous NAEP assessments of mathematics, science, civics, and U.S. history reported that their instructors used textbooks as a primary instructional strategy.[17] Even with this heavy use of textbooks, however, students in both the 1988 and 1990 reading assessments reported reading relatively few pages each day for school and for homework, as shown in TABLE 1.5.

TABLE 1.5
Amount of Reading Completed for School and Homework (Grades 4, 8, and 12), 1988 to 1990

		GRADE 4		GRADE 8		GRADE 12	
How many pages do you read each day for school and for homework?	**Year**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**
More than 20	**1990**	23 (0.7)	236 (1.0)	13 (0.7)	269 (1.9)	17 (0.9)	304 (2.0)
	1988	22 (1.1)	231 (2.1)	12 (0.6)	272 (2.2)	15 (1.2)	298 (1.8)*
16 to 20	**1990**	16 (0.5)	237 (1.4)	10 (0.4)	269 (1.9)	11 (0.5)	294 (1.7)
	1988	16 (0.7)	232 (2.0)	10 (0.5)	269 (2.1)	12 (0.7)	294 (2.0)
11 to 15	**1990**	16 (0.5)	239 (1.5)	15 (0.5)	265 (1.9)	14 (0.5)	292 (1.6)
	1988	15 (0.6)	237 (2.1)	17 (0.6)*	268 (1.8)	17 (0.8)*	293 (1.5)
6 to 10	**1990**	21 (0.5)	235 (1.2)	28 (0.7)	264 (1.2)	26 (0.7)	288 (1.1)
	1988	24 (0.9)*	234 (1.6)	30 (0.7)	266 (1.6)	25 (0.8)	287 (1.2)
5 or fewer	**1990**	24 (0.7)	223 (1.5)	35 (1.0)	252 (1.3)	33 (1.0)	278 (1.2)
	1988	23 (0.8)	221 (1.8)	32 (1.0)*	254 (1.3)	31 (1.4)	277 (1.0)

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

[17] J.A. Dossey, I. Mullis, M.M. Lindquist, D.L. Chambers, *The Mathematics Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1988).

I. Mullis, L.B. Jenkins, *The Science Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1988).

D.C. Hammack, M. Hartoonian, J. Howe, L.B. Jenkins, L.S. Levstik, W. MacDonald, I. Mullis, E. Owen, *The U.S. History Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

L. Anderson, L.B. Jenkins, J. Leming, W.B. MacDonald, I. Mullis, M.J. Turner, J.S. Wooster, *The Civics Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

Students' reports about the number of pages read daily for school were relatively stable from assessment to assessment. In both 1988 and 1990, more than half of the eighth- and twelfth-grade students said they read 10 or fewer pages each day for their schoolwork. Students in the upper grades reported reading somewhat fewer pages each day for school and homework than the fourth graders. For example, in both assessment years, approximately one-fourth of the fourth graders said they read five or fewer pages each day for school compared with approximately one-third of the eighth and twelfth graders. Similar to 1988, students in 1990 who read more than 20 pages each day had higher proficiencies than students who read five or fewer pages.

SUMMARY In contrast to the heavy reliance on workbooks and textbooks consistently reported in NAEP assessments, research about effective reading achievement suggests that discussion, writing, and projects about reading would be more effective in helping students understand what they read. There is also evidence that reading more often and reading a greater variety of texts helps students increase their understanding of what they read.

Although the results of NAEP's 1990 reading assessment suggest that a variety of instructional approaches and materials are being used, workbooks and textbooks still dominate. The majority of students — three-fourths at grade 4, two-thirds at grade 8, and more than half at grade 12 — reported completing workbook activities on a weekly basis or more often. Ninety-two percent of the twelfth graders reported at least weekly assignments related to reading their textbooks, with 78 percent of those students reporting such assignments daily. Although achievement levels were about the same across varying frequencies of workbook assignments, the small percentage of twelfth graders who reported never reading textbooks for assignments had lower average reading achievement.

In general, twelfth graders who reported more school assignments based on a variety of materials had higher reading achievement than those who reported never reading such materials for school assignments. Also, students who reported reading novels, poems, or stories on a daily basis for school assignments had higher average reading proficiency than students who reported doing so less frequently. At all three grades, students who read more pages each day for school (20 or more) had substantially higher proficiency than students who read fewer pages (five pages or less).

Overall, the results indicate that the majority of the students surveyed in 1990 engaged in some form of discussion-related activity as a part of classroom instruction on a weekly basis or more often. Yet, substantial percentages of students (25 percent at grade 4, 20 percent at grade 8, and 12 percent at grade 12) reported that their teachers never asked

them to talk about what they had read and these students had lower average proficiency than students who reported at least monthly opportunities for discussion. Also, eighth and twelfth graders reported more discussion emphasis on vocabulary than on their understanding or interpretations of what they had read. The majority of the students reported being asked by their teachers to explain their understanding of what they had read and to discuss their interpretations only on a weekly or monthly basis. Eighth and twelfth graders who said they never engaged in such activities performed worse than those who reported doing so.

Only about 10 percent of the twelfth graders said they were asked daily by their teachers to make predictions based on what they read, to read for the purpose of acquiring new information, or to read to show how to use reading skills. However, approximately half of the students reported being asked to engage in each type of activity on either a weekly or monthly basis.

At all three grades, about one-half of the students reported being asked to engage in group activities or projects about their reading monthly or more often, while the other half reported such activities rarely or never. Frequent use of journal writing as an activity was more evident at grade 4 than at grades 8 and 12. About one-half of the fourth graders reported writing in journals about their reading weekly or more often, compared to 28 to 29 percent of the eighth and twelfth graders. At grades 8 and 12, two-thirds of the students said that they wrote reports about their reading monthly or several times a year.

The pattern found in the relationships between achievement and frequency of group work/projects or the frequency of either journal writing at grade 4 or report writing at grades 8 and 12 shows that students reporting at the extremes, either participating in these activities daily or never, had lower average proficiency than students who reported a moderate approach.

CHAPTER TWO

STUDENTS' READING EXPERIENCES OUTSIDE OF SCHOOL

In addition to being proficient in reading, good readers interact with a wide variety of materials on their own and share their experiences with family and friends. Research indicates that home and attitudinal variables affect students' reading achievement.[18] Thus, it is important to understand students' attitudes toward reading and the extent to which home support is available for reading. This chapter explores the role that reading experiences play in the lives of students outside of school.

STUDENTS' ATTITUDES TOWARD READING OUTSIDE OF SCHOOL, 1988 TO 1990

Students' attitudes toward reading influence the extent to which they understand what they read, enjoy academic success, and broaden their learning experiences.[19] Students who enjoy reading are likely to read frequently, thus developing their fluency and improving their comprehension strategies. Background questions included in the 1988 and 1990 reading assessments asked students to report on their attitudes toward reading in terms of the extent to which they read books, magazines, newspapers, and other materials in their spare time.

[18] J.T. Guthrie and V. Greaney, "Literacy Acts" in R. Barr, M. Kamil, P. Mosenthal, and P.D. Pearson, eds., *Handbook of Reading Research: Volume II* (New York, NY: Longman, 1991).

[19] P. Johnston and P. Winograd, "Passive Failure in Reading," *Journal of Reading Behavior* 17 (1985): 279-301.

As shown in TABLE 2.1, there are a number of differences between 1988 and 1990 in both the percentages and proficiencies of students who reported reading outside of school. Fourth-grade students appeared to be reading outside of school less often in 1990 than in 1988. Seventy-seven percent of the fourth graders reported reading outside of school on at least a weekly basis in 1988, but only 66 percent reported doing so in 1990. Also, a higher percentage of fourth graders in 1990 than in 1988 reported never reading outside of school. In 1988, 16 percent of the fourth graders reported reading a few times a year or never, but 26 percent reported doing so in 1990.

TABLE 2.1
Frequency of Reading Outside of School (Grades 4, 8, and 12), 1988 to 1990

		GRADE 4		GRADE 8		GRADE 12	
How often do you read outside of school?	**Year**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**
Almost every day	**1990**	43 (0.9)	240 (1.3)	40 (0.8)	270 (1.2)	39 (0.7)	294 (1.1)
	1988	46 (1.1)	238 (1.4)	27 (1.1)*	277 (1.4)*	24 (0.7)*	298 (1.2)*
Weekly	**1990**	23 (0.7)	236 (1.4)	30 (0.6)	261 (1.1)	27 (0.6)	290 (1.2)
	1988	31 (0.7)*	230 (1.4)*	33 (0.8)*	262 (1.3)	28 (1.0)	289 (1.4)
Monthly	**1990**	8 (0.5)	232 (2.3)	15 (0.5)	257 (1.8)	15 (0.5)	287 (1.3)
	1988	8 (0.5)	228 (2.5)	18 (0.8)*	262 (1.7)*	19 (0.6)*	286 (1.4)
Few times a year	**1990**	7 (0.4)	223 (2.4)	10 (0.4)	249 (1.8)	13 (0.6)	288 (1.6)
	1988	6 (0.5)	215 (3.2)	9 (0.5)	259 (2.5)*	15 (0.7)*	286 (1.8)
Never	**1990**	19 (0.6)	219 (1.5)	6 (0.3)	228 (2.1)	6 (0.5)	259 (2.7)
	1988	10 (0.6)*	209 (2.2)*	13 (0.7)*	240 (2.2)*	14 (0.7)*	267 (2.1)*

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

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In contrast, eighth and twelfth graders reported reading outside of school somewhat more frequently, in general, in 1990 compared to 1988. At grade 8, there were significant increases between 1988 and 1990 in the percentage of students who reported more frequent reading outside of school. Forty percent of the eighth graders in 1990 reported outside reading almost every day, compared with 27 percent in 1988. This

significant increase in the percentage of students who reported reading almost every day was accompanied by decreases in the proportions of students who reported reading outside of school on either a weekly or monthly basis. A significant decrease between 1988 and 1990 was also evident for students who reported never reading outside of school.

The results at grade 12 showed significantly more twelfth graders reading outside of school almost every day in 1990 than in 1988. In 1990, 39 percent of the twelfth graders reported daily reading outside of school, while only 24 percent said they did so in 1988. Although some decreases were observed for students reporting outside reading on a monthly basis or only reading outside of school a few times a year, a significantly lower percentage of twelfth graders in 1990 than in 1988 said they never read outside of school.

In both 1988 and 1990, the majority of students across grade levels reported reading outside of school on at least a weekly basis. At grade 4, two-thirds of the students in 1990 and three-fourths in 1988 said they read outside of school weekly. At grade 8, 70 percent of the students in 1990 and 60 percent in 1988 reported outside reading this frequently. Sixty-six percent of the twelfth graders in 1990 and 52 percent in 1988 said they read outside of school on a weekly basis or more often.

Available research evidence suggests that large percentages of students devote little or no time to leisure reading.[20] In 1988 and 1990, eighth- and twelfth-grade students were asked by NAEP about the kind of reading they preferred to do in their spare time for fun (TABLE 2.2). Compared to the data for overall reading outside of school, the results show that at both grade levels, the percentages of students who reported never reading for fun increased significantly between 1988 and 1990. In 1988, 19 percent of the eighth graders and 18 percent of the twelfth graders reported not reading for fun in their spare time. However, in 1990 these percentages increased to 30 percent of the eighth graders and 29 percent of the twelfth graders not reading for fun. The increase between 1988 and 1990 in the percentage of students who reported never reading for fun was matched by decreases in the percentages of students who reported reading either only fiction or only non-fiction. In particular, approximately 10 percent fewer of both the eighth and twelfth graders reported reading fiction in their spare time.

[20] L.G. Fielding, P.T. Wilson, R.C. Anderson, "A New Focus on Free Reading: The Role of Trade Books in Reading Instruction," in T. Raphael and R. Reynolds, eds., *Contexts of Literacy* (New York, N.Y.: Longman, 1990).

V. Greaney, "Factors Related to Amount and Type of Leisure-Time Reading," *Reading Research Quarterly*, 15 (1980): 337-57.

TABLE 2.2

Types of Reading Students Do in Their Spare Time (Grades 8 and 12), 1988 to 1990

What type of reading do you do in your spare time for fun?	Year	GRADE 8 Percent of Students	GRADE 8 Average Proficiency	GRADE 12 Percent of Students	GRADE 12 Average Proficiency
Don't read	**1990**	30 (0.7)	246 (1.3)	29 (1.0)	276 (1.2)
	1988	19 (0.7)*	241 (1.8)*	18 (0.9)*	269 (1.6)*
Fiction	**1990**	27 (0.6)	269 (1.2)	23 (0.7)	296 (1.2)
	1988	37 (0.8)*	273 (1.3)*	32 (1.0)*	294 (1.2)
Non-fiction	**1990**	15 (0.4)	260 (1.6)	21 (0.7)	288 (1.4)
	1988	17 (0.6)*	259 (1.8)	24 (0.9)*	284 (1.3)*
Fiction and Non-fiction	**1990**	29 (0.7)	271 (1.3)	27 (0.8)	301 (1.2)
	1988	27 (0.6)	269 (1.4)	26 (1.0)	296 (1.3)*

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

Considering the prevalence of television watching as reported in previous assessments,[21] NAEP asked students in 1988 and 1990 about the frequency with which they watched television. Research evidence suggests that many avid readers watch a lot of television, while other children neither watch much television nor read.[22] However, this does not mean that television viewing has no effect on time given to reading — frequent television viewing limits the amount of time available for other activities such as reading.[23]

In the past 40 years, the effect of television viewing on students' achievement has been the focus of much debate. Television viewing has been both blamed for lowering students' academic achievement and credited with increasing students' learning. The lack

[21] I. Mullis, J.A. Dossey, M. Foertsch, L.R. Jones, C.A. Gentile, *Trends in Academic Progress* (Washington, DC: National Center for Education Statistics, 1991).

J. Langer, A. Applebee, I. Mullis, and M. Foertsch, *Learning to Read in our Nation's Schools*, (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

I. Mullis and L.B. Jenkins, *The Reading Report Card* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1988).

[22] S. Neuman, "The Home Environment and Fifth-Grade Students' Leisure Reading," *Elementary School Journal*, 83 (1986): 333-43.

[23] P. Heather, *Young People's Reading: A Study of the Leisure Reading of 13-15 year olds.* (Sheffield, England: University of Sheffield, Center for Research on User Studies, 1981).

of conclusiveness about the effect of television viewing on achievement has been attributed to the fact that the relationship between television viewing and reading is complex and is influenced by many factors, including the types of programs viewed and the topics of these programs.[24]

As shown in TABLE 2.3, students reported devoting a considerable amount of time each day to watching television. Yet, the data also indicate some reduction between 1988 and 1990 in the number of hours per day students reportedly spent engaged in this activity.

TABLE 2.3
Students' Reports of Time Spent Viewing Television Daily (Grades 4, 8, and 12), 1988 to 1990

		GRADE 4		GRADE 8		GRADE 12	
Hours	**Year**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**
6 or more	1990	25 (0.7)	215 (1.2)	15 (0.6)	245 (1.6)	6 (0.3)	271 (2.4)
	1988	27 (1.0)*	217 (1.6)	18 (0.7)*	250 (1.6)*	8 (0.6)*	268 (2.4)
3 to 5	1990	37 (0.8)	239 (1.0)	49 (0.7)	261 (1.1)	34 (0.9)	284 (1.3)
	1988	42 (0.9)*	237 (1.3)	53 (1.0)*	264 (1.3)	41 (0.9)*	283 (1.1)
0 to 2	1990	38 (0.7)	240 (1.3)	37 (0.9)	267 (1.3)	60 (0.9)	293 (1.0)
	1988	31 (0.9)*	234 (1.8)*	30 (1.0)*	270 (1.4)	52 (1.0)*	293 (1.0)

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

In 1990, 62 percent of the fourth graders reported watching three or more hours of television each day, with 25 percent of these students reporting daily viewing of six or more hours. Almost two-thirds of the eighth graders and 40 percent of the twelfth graders reported watching three or more hours of television each day. These results, however, represented some decreases from the 1988 levels.

[24] M. Morgan and L. Gross, "Television and Educational Achievement and Aspirations." In D. Pearl, L. Boouthliet, and J. Lazar, eds., *Television and behavior: Ten years of scientific progress and implications for the 1980s.* (Rockville, MD: U.S. Department of Health and Human Services, National Institute of Mental Health, 1982).

P.A. Williams, E.H. Haertel, G.D. Haertel, and H.J. Walberg, "The Impact of Leisure-Time Television on School Learning: A Research Synthesis," *American Educational Research Journal*, 19:19-50, 1982.

W.J. Potter, "Does Television Viewing Hinder Academic Achievement Among Adolescents?", *Human Communication Research*, 14:27-46, 1987.

Across all three grades, there were downward shifts in the distribution of television viewing between 1988 and 1990. Fewer students reported watching six or more hours each day, and fewer reported watching from three to five hours each day, with the net effect that the percentage of moderate viewers (those watching from 0 to 2 hours daily) increased. Seven percent fewer fourth and eighth graders in 1990 than in 1988, and 9 percent fewer twelfth graders, reported watching three or more hours of television each day.

In general, lower reading achievement was associated with watching six or more hours of television each day. For this high amount of television viewing, the decreases in percentages of students were quite small — 2 to 3 percent across all three grades.

STUDENTS' READING EXPERIENCES IN THE HOME, 1988 TO 1990

The home environment is another important determinant of students' attitudes toward literacy and schooling. High levels of reported reading enjoyment have been associated with the availability of reading materials in the home.[25] Furthermore, children's reading materials tend to consist of whatever is readily available to them.[26] For example, research indicates that students frequently report reading newspapers purchased by their parents.[27] In 1988 and 1990, NAEP asked students about the availability of various types of reading materials in their homes. As shown in TABLE 2.4, the majority of students at each grade level had access to a variety of materials in their homes in both 1988 and 1990. Very few students (approximately 5 percent) across grade levels said they lived in homes with 25 or fewer books in 1988 and 1990. However, the percentages of fourth and twelfth graders who reported that their families got a newspaper or had an encyclopedia decreased significantly between 1988 and 1990.

The presence of parents or siblings who model and share reading, and the availability of reading materials in the home are also critical factors in the development of students' appreciation of reading and, ultimately, their comprehension and fluency.[28] In

[25] L.M. Morrow, "Home and School Correlates of Early Interest in Literature," *Journal of Educational Research* 76: 221-230.

[26] J. Ingham, *Books and Reading Development: The Bradford Book Flood Experiment* (London: Heinemann Educational, 1981).

[27] T. Gorman and J. White, "Pupils' Views About Reading and Writing," (in press).

[28] D. Taylor, *Family Literacy: Young Children Learning to Read and Write* (Exeter, NH: Heinemann Educational Books, 1983).

TABLE 2.4

Students' Reports of Types of Materials in the Home (Grades 4, 8, and 12), 1988 to 1990

		GRADE 4		GRADE 8		GRADE 12	
Does your family. . .	**Year**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**
get a newspaper?							
Yes	**1990**	70 (0.9)	236 (0.9)	75 (0.8)	264 (1.0)	81 (0.8)	291 (1.0)
	1988	74 (1.0)*	234 (1.1)	77 (0.8)	266 (1.1)	83 (0.9)*	289 (0.8)
No	**1990**	23 (0.8)	228 (1.5)	23 (0.7)	254 (1.7)	18 (0.7)	280 (1.3)
	1988	21 (0.9)	222 (1.7)*	21 (0.8)	254 (1.6)	16 (0.9)	278 (2.0)
have an encyclopedia?							
Yes	**1990**	69 (0.7)	235 (0.9)	79 (0.6)	263 (1.1)	82 (0.7)	290 (1.0)
	1988	72 (0.8)*	233 (1.1)	80 (0.7)	265 (1.1)	84 (0.7)*	288 (0.8)
No	**1990**	24 (0.6)	229 (1.3)	19 (0.5)	256 (1.4)	17 (0.7)	287 (1.8)
	1988	22 (0.7)*	226 (1.9)	18 (0.7)	259 (1.6)	15 (0.7)*	284 (2.0)
have 25 or more books?							
Yes	**1990**	89 (0.5)	236 (0.9)	91 (0.4)	263 (1.0)	93 (0.5)	291 (1.0)
	1988	89 (0.7)	234 (1.1)	92 (0.5)	265 (1.0)	93 (0.5)	289 (0.8)
No	**1990**	6 (0.3)	203 (2.5)	5 (0.3)	231 (2.6)	5 (0.4)	265 (2.4)
	1988	6 (0.4)	201 (2.9)	4 (0.3)	235 (3.0)	5 (0.4)	266 (3.0)
get a magazine regularly?							
Yes	**1990**	62 (0.8)	238 (0.9)	78 (0.9)	265 (1.0)	84 (0.6)	292 (1.0)
	1988	62 (1.1)	235 (1.3)	76 (0.7)	268 (1.0)	85 (0.7)	290 (0.8)
No	**1990**	26 (0.7)	224 (1.2)	18 (0.7)	248 (1.5)	15 (0.6)	276 (1.6)
	1988	27 (0.9)	221 (1.3)	20 (0.6)	250 (2.0)	14 (0.7)	272 (1.7)

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent because there were three possible response categories — yes, no, and I don't know — and only the percentages for the yes and no categories are presented here.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

order to obtain information concerning reading experiences in the home, NAEP asked students in 1990 about the extent to which they saw adults in their homes reading. TABLE 2.5 summarizes eighth- and twelfth-grade students' reports. Eighty-five percent of the eighth graders and 87 percent of the twelfth graders said the adults in their homes read a lot or some of the time, while only 14 percent at each grade level reported that adults hardly ever or never read. Students at both grade levels who said the adults in their homes

read a lot had higher average proficiencies than those who said they hardly ever or never saw adults reading. Thus, these results are consistent with other research findings that emphasize the intergenerational aspect of reading, and the fact that parental interest in reading and parental reading habits influence the reading behavior of students.[29]

TABLE 2.5
The Extent to which Adults in the Home Read (Grades 4, 8, and 12), 1990

	GRADE 8		GRADE 12	
How much do the adults in your home read?	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
A lot	46 (0.7)	267 (1.1)	47 (0.7)	295 (1.0)
Some	39 (0.6)	261 (1.1)	40 (0.6)	288 (1.3)
Hardly	11 (0.4)	250 (2.1)	11 (0.5)	282 (1.8)
None	3 (0.3)	234 (3.6)	3 (0.2)	256 (4.1)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

To further explore reading experiences in the home, students were asked whether they talked with family or friends about what they read. Their responses are presented in TABLE 2.6. In general, discussing reading seems to be a fairly common household practice. At grade 4, approximately two-thirds of the students reported discussing what they read with family or friends on at least a weekly basis. Approximately one-half of the eighth- and twelfth-grade students reported discussing their readings with the same frequency. However, 22 percent of the fourth graders, 31 percent of the eighth graders, and 25 percent of the twelfth graders said they talked about what they read with family or friends only yearly or never.

[29] S. Neuman, "The Home Environment and Fifth-Grade Students' Leisure Reading," *Elementary School Journal*, 83, 1986: 333-43.

D.L. Spiegel, *Reading for Pleasure: Guidelines*. (Newark, DE: International Reading Association, 1981).

Overall, higher proficiencies appear to be associated with reading discussions in the home. Fourth and eighth graders who reported never talking about their readings had lower proficiencies than those who engaged in discussions. Twelfth-grade students who reported talking about their readings at least monthly had higher proficiencies than those who reported such discussions yearly or never.

TABLE 2.6
Extent to which Students Discussed Readings With Family or Friends, 1990

How often do you tell family or friends about what you read?	Grade		Daily	Weekly	Monthly	Yearly	Never
	4	Percent	31 (0.8)	33 (0.9)	14 (0.4)	8 (0.4)	14 (0.5)
		Proficiency	229 (1.3)	241 (1.2)	242 (2.1)	228 (2.2)	218 (1.6)
	8	Percent	16 (0.6)	32 (0.7)	21 (0.7)	14 (0.4)	17 (0.5)
		Proficiency	262 (2.0)	267 (1.2)	266 (1.2)	257 (1.7)	242 (1.5)
	12	Percent	17 (0.5)	35 (0.7)	23 (0.7)	14 (0.5)	11 (0.6)
		Proficiency	292 (1.6)	295 (1.0)	291 (1.2)	285 (1.4)	265 (2.2)

Tested for statistically significant differences, where alpha equals .05 per set of comparisons between each response category, within a grade level. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

SUMMARY There appears to be more outside reading in 1990 compared to 1988 for both eighth- and twelfth-grade students. A significant increase in reading on a daily basis was reported at both grade levels — from 27 percent in 1988 to 40 percent in 1990 for eighth graders and from 24 percent to 39 percent for twelfth graders. Also, significantly lower percentages of eighth- and twelfth-grade students in 1990 than in 1988 said they never read outside of school. Similar increases between 1988 and 1990 in outside reading activity were not observed for the fourth graders. In fact, fewer fourth graders in 1990 than in 1988 said they were reading outside of school on a weekly basis (23 compared to 31 percent) and significantly more of them said they never read outside of school (19 compared to 10 percent).

Although eighth and twelfth graders reported more reading in general in 1990 than in 1988, this increase did not appear to be related to more reading for enjoyment. Indeed, between 1988 and 1990, the proportions of eighth and twelfth graders who

reported never reading for fun in their spare time rose from approximately 19 percent to about 30 percent. Students who reported never reading for fun in their spare time had lower average reading achievement than their classmates.

Although there were decreases between 1988 and 1990 in the amount of time students reportedly spent watching television, almost two-thirds of the eighth graders and 40 percent of the twelfth graders continued to watch three or more hours of television each day in 1990. Also, one-quarter of the fourth graders continued to watch six or more hours of television each day.

A higher percentage of eighth and twelfth graders in 1990 reported that the adults in their home read either "some" or "a lot" than reported "hardly" or "none." On average, these students had higher achievement than students who said the adults in their home never read. Approximately one-quarter of the fourth and twelfth graders and one-third of

CHAPTER THREE

READING IN AND OUT OF SCHOOL

SUPPORT FOR INSTRUCTION

Students' views of reading are influenced both in school and outside of school by the literacy activities in which they engage.[30] These elements help to shape students' ideas about why people read and what can be gained from reading. If students are unaware that reading can be pleasurable and informative, they may engage in other activities. In contrast, individuals with a higher level of appreciation may actively seek opportunities to read at home and at school, complete homework assignments, read more than one book by the same author or about the same topic, or borrow materials from the library.

HOMEWORK IN 1988 AND 1990

Research shows that homework assignments play a significant role in the lives of most students,[31] and that homework reading demands are considerable.[32] NAEP asked students about the amount of homework assigned to them on a daily basis in 1988 and 1990. Because slightly different questions were asked of fourth graders than were asked of eighth and twelfth graders, fourth-grade results will be discussed separately.

30 R.C. Anderson, E. Hiebert, J. Scott, and I. Wilkinson, *Becoming A Nation of Readers* (Washington, D.C.: National Institute of Education, 1985).

31 L. Pope, "A new look at homework," *Teacher*, 96, 94-99, 1978.

32 F. Coulter, "Homework," in T. Hansen and T.N. Postlethwaite, eds, *The International Encyclopedia of Education* (Oxford, England: Pergamon Press, 1985), pp. 2289-2294.

Fourth-graders responses are summarized in TABLE 3.1. The results indicate essentially no differences between 1988 and 1990 in the percentages or proficiencies of fourth-grade students reporting various amounts of time on homework. In both 1988 and 1990, approximately one-third of the fourth graders reported spending a half hour or less on homework each day, and one-quarter said they spent an hour each day. An examination of proficiency in relation to amount of time spent on homework shows that fourth graders who reported not doing homework performed worse than those who reported completing homework assignments or reported having no homework assigned.

TABLE 3.1
Fourth-Grade Students' Reports of Amount of Time Spent on Homework Each Day, 1988 to 1990

		GRADE 4	
How much time do you spend on homework each day?	**Year**	**Percent of Students**	**Average Proficiency**
More than 1 hour	**1990**	16 (0.7)	233 (1.2)
	1988	18 (0.8)	231 (1.4)
1 hour	**1990**	25 (0.7)	239 (1.3)
	1988	27 (1.2)	235 (1.6)
½ hour or less	**1990**	34 (1.1)	228 (1.5)
	1988	34 (1.3)	226 (2.3)
Don't usually do	**1990**	4 (0.3)	202 (2.6)
	1988	4 (0.4)	204 (4.4)
None assigned	**1990**	21 (1.4)	238 (1.9)
	1988	17 (1.3)	232 (2.2)

Tested for statistically significant differences from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

TABLE 3.2 summarizes eighth- and twelfth-grade students' reports of the amount of time they spent on homework each day. Overall, students appeared to be completing about the same amount of homework in 1990 as in 1988, with a few exceptions. In 1990, compared to 1988, there were increases in the percentages of eighth graders who reported that they don't usually do homework and twelfth graders who reported having no home-

work assigned. There was also a significant decrease between 1988 and 1990 in the percentage of eighth graders who said they did two hours of homework each day.

In general, eighth graders who reported having and doing homework in 1988 and 1990 had higher proficiencies than their counterparts who reported having no homework or not doing it. For example, the average proficiencies of students who reported two hours of homework daily were 34 points higher in 1990 and 30 points higher in 1988 than the proficiencies of students who said they did not usually do homework. Similar to the 1988 results, the results in 1990 suggest that by grade 12, the more homework students complete each day, the higher their reading proficiency. However, 22 percent of the twelfth graders in 1990 and 19 percent in 1988 said they either did not have homework assigned or did not do homework.

TABLE 3.2

Eighth and Twelfth Grade Students' Reports of Amount of Homework Each Day, 1988 to 1990

		GRADE 8		GRADE 12	
How much time do you usually spend on homework each day?	**Year**	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
More than 2 hours	**1990**	9 (0.6)	263 (2.1)	10 (0.6)	298 (1.9)
	1988	9 (0.5)	265 (2.0)	11 (0.8)	296 (2.4)
2 hours	**1990**	17 (0.7)	270 (1.4)	17 (0.7)	294 (1.4)
	1988	20 (0.6)*	269 (1.2)	18 (0.8)	293 (1.6)
1 hour	**1990**	41 (0.8)	265 (1.2)	31 (0.7)	293 (0.9)
	1988	42 (0.9)	266 (1.1)	33 (0.9)	288 (0.9)*
½ hour or less	**1990**	20 (0.8)	258 (1.5)	21 (0.6)	287 (1.3)
	1988	19 (0.6)	261 (1.5)	19 (0.8)	288 (1.8)
Don't usually do	**1990**	8 (0.4)	236 (2.4)	9 (0.4)	278 (2.4)
	1988	6 (0.5)*	239 (5.1)	9 (0.4)	281 (2.4)
None assigned	**1990**	6 (0.5)	246 (2.5)	13 (0.8)	273 (1.6)
	1988	5 (0.4)	252 (3.7)	10 (0.8)*	269 (2.6)

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

TABLE 3.3 summarizes students' responses to a question about how often someone at home helped them with their homework. In general, there were relatively few changes between 1988 and 1990 in the amount of help students received with their homework. In both 1988 and 1990, the majority of fourth graders and about two-fifths of the eighth graders reported receiving at least weekly assistance with their homework. Only 12 to 14 percent of the twelfth graders reported assistance this often. Higher achievement in reading did not appear to be clearly related to amount of assistance with homework in either 1988 or 1990. Across grade levels, students who reported receiving help with homework daily had lower proficiencies than those who reported receiving it less frequently. It may be the case that students who are less successful readers are assigned more homework as part of special instructional efforts to improve their achievement, they may require more parental assistance to complete their homework, or parents may be more concerned and attentive about students' homework when their children are having difficulty in school.

TABLE 3.3

Reports of Assistance With Homework, 1988 to 1990

		GRADE 4		GRADE 8		GRADE 12	
How often does someone at home help with homework?	**Year**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**	**Percent of Students**	**Average Profic.**
Almost every day	1990	31 (0.8)	225 (1.3)	19 (0.6)	249 (1.7)	4 (0.2)	267 (2.9)
	1988	33 (1.0)	222 (1.5)	16 (0.7)*	250 (1.6)	3 (0.3)	267 (3.0)
Weekly	1990	23 (0.6)	239 (1.4)	25 (0.5)	264 (1.3)	10 (0.4)	281 (1.8)
	1988	23 (0.9)	236 (1.7)	24 (0.8)	264 (1.3)	9 (0.6)	277 (2.2)
Monthly	1990	7 (0.4)	246 (2.4)	15 (0.6)	270 (1.4)	13 (0.6)	292 (1.6)
	1988	7 (0.5)	239 (3.4)	15 (0.8)	272 (1.9)	12 (0.6)	292 (2.1)
Never	1990	29 (0.6)	233 (1.0)	38 (0.7)	263 (1.0)	66 (0.6)	293 (1.0)
	1988	32 (1.0)*	232 (1.7)	42 (0.9)*	266 (1.2)	69 (0.9)*	291 (0.9)
Didn't bring home	1990	9 (0.8)	237 (2.4)	4 (0.4)	242 (3.2)	8 (0.6)	270 (2.3)
	1988	6 (0.7)*	236 (3.6)	3 (0.3)*	239 (5.0)	7 (0.6)	264 (3.0)

* Statistically significant difference from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factorrs Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

INDEPENDENT READING ACTIVITIES In 1990, NAEP explored students' attitudes toward reading and books by asking them questions about their independent reading behavior. The questions addressed reading more than one book by the same author, borrowing books from a library, and students' perceptions of their own ability to read.

It seems reasonable to assume that people who enjoy reading develop a preference for particular authors or topics. TABLE 3.4 contains the results of eighth- and twelfth-grade students' responses to a question about whether they read one or more books by the same author or about the same topic. In general, the results indicate only moderate levels of engagement in this type of activity. For example, half of the eighth graders and one-third of the twelfth graders reported reading books by a particular author or about a certain topic on at least a monthly basis. Both eighth- and twelfth-grade students who reported never engaging in this activity (approximately one-fifth) had significantly lower proficiencies than those who reported having such experiences.

TABLE 3.4
Students' Favorite Authors or Topics (Grades 8 and 12), 1990

	GRADE 8		GRADE 12	
How often do you read one or more books by the same author or about the same topic?	**Percent of Students**	**Average Proficiency**	**Percent of Students**	**Average Proficiency**
Weekly	16 (0.5)	268 (1.5)	8 (0.5)	296 (2.0)
Monthly	35 (0.7)	267 (1.1)	25 (0.7)	295 (1.2)
Yearly	33 (0.6)	261 (1.4)	45 (0.8)	292 (1.0)
Never	16 (0.7)	239 (1.6)	21 (0.8)	271 (1.3)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

It also seems reasonable to assume that people who enjoy reading borrow books frequently from the library for themselves. Thus, NAEP asked students in 1990 how often they borrowed books from the library. TABLE 3.5 summarizes students' responses. Elementary school students appear to make frequent use of the library. Approximately two-thirds

of the fourth graders reported taking books out of the library for themselves on at least a weekly basis. However, eighth- and twelfth-grade students appeared to use the library rather infrequently, with 56 percent of the eighth graders and 63 percent of the twelfth graders taking books from the library monthly or yearly. Only one-fourth of the eighth and one-eighth of the twelfth graders reported borrowing books from the library at least weekly. The relationship between library usage and reading proficiency shows that the small percentage of students at each grade level who reported taking books out of the library on a daily basis had lower average achievement than those who used the library weekly, monthly, or yearly. Teachers may encourage less proficient readers to borrow books from the library more frequently in the hope that increased exposure will improve students' reading ability.

TABLE 3.5
Frequency of Students' Use of Library (Grades 4, 8, and 12), 1990

How often do you take books out of the library for yourself?	Grade		Daily	Weekly	Monthly	Yearly	Never
	4	Percent	6 (0.6)	60 (1.4)	16 (0.9)	7 (0.6)	10 (0.7)
		Proficiency	214 (5.0)	238 (1.4)	244 (2.8)	228 (3.2)	210 (3.0)
	8	Percent	5 (0.4)	19 (0.9)	33 (0.7)	23 (0.6)	20 (0.7)
		Proficiency	258 (2.4)	264 (1.6)	267 (1.2)	263 (1.4)	245 (1.5)
	12	Percent	3 (0.3)	9 (0.4)	27 (0.6)	36 (0.7)	25 (0.7)
		Proficiency	280 (3.3)	292 (2.3)	296 (1.3)	291 (1.1)	277 (1.4)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

Research indicates that more favorable attitudes toward reading tend to be associated with higher levels of reading achievement,[33] and that students who perceive themselves as successful tend to be intrinsically motivated and confident in their own abilities.[34] In an effort to better understand students' attitudes toward reading in 1990,

[33] V. Greaney and M. Hegarty. "Correlates of Leisure-Time Reading," *Journal of Research in Reading,* 10, 1975. S.C. Moore and R. Lemons, "Measuring Reading Attitudes: Three Dimensions," *Reading World,* 22(1), 1982.

[34] S. Harter and J. P. Connell, "A Model of the Relationships Among Children's Academic Achievement and Their Self-Perceptions of Competence, Control, and Motivational Orientation." In J. Nicholls, ed., *The Development of Achievement Motivation* (Greenwich, CT: 1984), pp. 219-250.

NAEP asked students to describe their own ability to read. TABLE 3.6 summarizes their responses. In general, students tend to view themselves as very good or good readers. At grade 4, approximately three-fourths of the students described themselves as very good or good readers. At grades 8 and 12, approximately 65 percent of the students said they were good readers or better. At each grade level, very few students — 4 percent — said they were poor readers. A relationship exists between self-perceptions of reading ability and actual performance. Students' increases in positive perceptions at each grade level appear to parallel increases in their proficiency levels. For example, across grade levels, students who said they were poor readers had lower average proficiency than those who thought they were better readers.

TABLE 3.6

Students' Perceptions of Their Ability to Read in 1990

What kind of a reader do you think you are?		Very Good	Good	Average	Poor
Grade 4	Percent	41 (0.7)	36 (0.7)	20 (0.7)	4 (0.3)
	Proficiency	244 (1.0)	234 (1.3)	224 (1.9)	193 (4.3)
Grade 8	Percent	28 (0.6)	36 (0.7)	31 (0.8)	4 (0.4)
	Proficiency	279 (1.3)	265 (1.1)	247 (1.1)	227 (2.8)
Grade 12	Percent	29 (0.6)	37 (1.0)	30 (0.8)	4 (0.3)
	Proficiency	304 (1.0)	294 (1.1)	277 (1.3)	258 (3.1)

The standard errors of the estimated proficiencies and percentages appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample. Percentages of students may not total 100 percent due to rounding.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

SUMMARY There were few changes between 1988 and 1990 in either the percentages or proficiencies of students reporting various amounts of time spent on homework each day. However, the few differences that were observed indicated somewhat less time being spent on homework. Between 1988 and 1990, significant increases occurred both in the percentage of eighth graders who reported that they don't usually do homework and the percentage of twelfth graders who reported having no homework assigned. Significantly fewer eighth graders in 1990 than in 1988 said they did two hours of homework each day.

In general, eighth graders who reported having and doing homework in both assessment years had higher proficiencies than their counterparts who reported having no homework or not doing it. At grade 12, the results in both 1988 and 1990 indicate that the more homework students complete each day, the higher their reading proficiency. However, 22 percent of the twelfth graders in 1990 (and 19 percent in 1988) said they either did not have homework assigned or did not do assigned homework.

There were also relatively few changes between 1988 and 1990 in the amount of help students received with their homework. In both 1988 and 1990, the majority of the fourth graders and about two-fifths of the eighth graders reported receiving at least weekly assistance with their homework. However, only 12 to 14 percent of the twelfth graders reported assistance this often. Higher reading achievement was not related to more assistance with homework, perhaps because parents pay more attention to homework when their children are having difficulty in school.

Results concerning students' independent reading behaviors indicate that students only moderately engage in reading one or more books by the same author or about the same topic, do not borrow books very often from the library once they leave the elementary grades, and are aware of their relative level of reading performance.

One-third of the twelfth graders reported reading one or more books by a particular author or about a topic on a weekly basis. Both eighth- and twelfth-grade students who reported never engaging in this activity appeared to have lower proficiencies than those who said they had such experiences.

Across grade levels, library use appears to decrease, particularly between elementary and middle school years. Two-thirds of the fourth graders compared to 24 percent of the eighth graders and 12 percent of the twelfth graders reported borrowing books from the library at least weekly.

CHAPTER FOUR

RESULTS FOR DEMOGRAPHIC GROUPS AND CONSTRUCTED-RESPONSE QUESTIONS

READING PROFICIENCY FOR THE NATION AND DEMOGRAPHIC SUBPOPULATIONS BETWEEN 1988 AND 1990

NAEP typically reports performance for the nation as a whole and for demographic subgroups defined by race/ethnicity, region, and gender. Across grade levels, the results indicate few changes between 1988 and 1990 in students' reading achievement.

The proficiency results for the 1988 and 1990 NAEP reading assessments conducted at grade 4 are presented in TABLE 4.1. Overall, the results for fourth graders indicate significantly higher proficiencies in 1990 than in 1988 at the 5th, 90th, and 95th percentiles. Consistent with the findings of previous NAEP assessments,[35] fourth-grade White students had higher proficiencies than their Black and Hispanic counterparts in both 1988 and 1990. Also, females outperformed males, and students from the

[35] I. Mullis, J. Dossey, M. Foertsch, L.R. Jones, and C. Gentile, *Trends in Academic Progress* (Washington, D.C., National Center for Education Statistics, 1991).

TABLE 4.1

Percentiles of Proficiency in Reading at Grade 4, 1990

	Average Proficiency	5th Percentile	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile
NATION								
1990	233 (0.9)	161 (1.0)	177 (1.9)	206 (1.1)	235 (0.9)	262 (1.0)	286 (1.1)	299 (0.9)
1988	230 (1.1)	156 (1.4)*	174 (2.2)	204 (2.0)	234 (1.2)	259 (1.1)	280 (0.9)*	293 (1.2)*
RACE ETHNICITY								
White								
1990	241 (0.9)	173 (2.8)	189 (1.4)	216 (1.4)	243 (0.9)	268 (0.9)	290 (0.8)	304 (1.6)
1988	238 (1.2)*	167 (3.0)	186 (3.6)	214 (1.3)	241 (1.7)	264 (1.1)*	285 (1.6)*	298 (2.7)
Black								
1990	209 (1.9)	142 (4.3)	157 (2.2)	183 (3.9)	211 (2.1)	237 (1.6)	259 (2.6)	273 (5.2)
1988	211 (1.9)	143 (4.5)	158 (4.7)	185 (3.4)	212 (2.5)	239 (2.0)	258 (1.9)	271 (3.4)
Hispanic								
1990	213 (1.6)	145 (2.2)	160 (3.0)	186 (2.1)	215 (1.8)	241 (1.6)	264 (1.8)	277 (2.4)
1988	210 (2.4)	135 (7.2)	153 (10.5)	182 (4.0)	213 (1.9)	240 (2.9)	260 (6.4)	272 (4.1)
GENDER								
Male								
1990	228 (1.1)	155 (2.0)	170 (1.5)	198 (0.9)	230 (1.4)	259 (1.1)	283 (1.6)	297 (1.4)
1988	227 (1.5)	149 (2.5)	167 (4.4)	199 (2.7)	230 (1.4)	257 (2.2)	279 (1.9)	293 (2.2)
Female								
1990	238 (1.0)	170 (2.0)	186 (1.7)	213 (1.1)	239 (1.0)	265 (1.0)	287 (2.1)	301 (2.1)
1988	234 (1.2)*	167 (1.9)	183 (1.7)	210 (1.0)	238 (1.1)	261 (1.1)*	281 (1.6)*	293 (1.6)*
REGION								
Northeast								
1990	237 (2.2)	163 (1.7)	180 (3.9)	210 (3.2)	240 (2.1)	267 (2.2)	289 (2.6)	301 (3.3)
1988	233 (2.8)	160 (6.0)	178 (6.5)	207 (4.5)	237 (2.4)	261 (3.2)	283 (3.5)	295 (4.1)
Southeast								
1990	225 (1.9)	155 (3.1)	171 (2.5)	197 (2.0)	226 (2.4)	254 (1.5)	279 (4.1)	293 (3.2)
1988	224 (2.5)	150 (5.1)	167 (4.2)	197 (4.0)	227 (3.5)	255 (4.1)	277 (3.2)	290 (3.8)
Central								
1990	235 (1.7)	164 (4.4)	182 (2.8)	210 (2.9)	237 (2.0)	262 (2.5)	286 (2.8)	300 (2.4)
1988	235 (2.2)	167 (5.3)	184 (4.8)	212 (2.8)	239 (2.0)	260 (1.9)	279 (2.2)	292 (3.5)
West								
1990	234 (2.1)	162 (3.2)	179 (2.7)	206 (3.0)	236 (2.1)	264 (2.2)	287 (2.0)	300 (2.2)
1988	230 (2.3)	154 (4.8)	172 (5.0)	203 (2.6)	233 (2.4)	260 (1.7)	283 (1.4)	297 (5.1)

Tested for differences from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

TABLE 4.2

Percentiles of Proficiency in Reading at Grade 8, 1990

	Average Proficiency	5th Percentile	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile
NATION								
1990	261 (1.0)	196 (1.6)	212 (1.6)	237 (1.4)	262 (1.4)	286 (0.8)	307 (1.1)	320 (2.0)
1988	263 (1.0)	195 (2.5)	212 (1.4)	240 (1.6)	266 (1.1)*	289 (1.7)	308 (1.0)	320 (1.8)
RACE ETHNICITY								
White								
1990	266 (1.1)	200 (1.3)	217 (1.9)	242 (1.4)	268 (1.4)	291 (1.2)	311 (1.4)	324 (1.3)
1988	269 (1.3)*	202 (6.0)	220 (2.7)	248 (1.7)*	273 (1.3)*	294 (0.7)	313 (1.3)	324 (1.5)
Black								
1990	246 (1.6)	189 (3.1)	204 (3.3)	226 (3.3)	247 (1.2)	269 (3.2)	289 (1.5)	301 (2.6)
1988	246 (2.0)	187 (4.0)	201 (3.7)	226 (2.3)	248 (2.0)	267 (2.8)	285 (2.6)	297 (3.8)
Hispanic								
1990	243 (1.8)	181 (4.0)	196 (4.4)	221 (2.0)	245 (2.1)	267 (1.8)	287 (2.6)	297 (5.4)
1988	244 (2.1)	178 (4.3)	191 (4.3)	218 (4.3)	247 (3.4)	272 (2.5)	288 (2.5)	301 (3.1)
GENDER								
Male								
1990	253 (1.2)	188 (2.4)	202 (1.6)	228 (2.3)	254 (1.2)	279 (1.3)	301 (1.3)	314 (2.2)
1988	256 (1.3)*	186 (3.6)	201 (1.9)	231 (1.9)	260 (2.1)	284 (1.7)*	305 (1.9)	317 (1.8)
Female								
1990	268 (1.0)	210 (2.4)	224 (1.9)	246 (1.7)	270 (1.1)	291 (1.0)	311 (1.2)	324 (2.4)
1988	270 (1.1)	211 (1.7)	225 (1.5)	249 (1.3)	272 (1.2)	292 (1.0)	311 (1.2)	322 (2.2)
REGION								
Northeast								
1990	267 (2.5)	201 (3.8)	217 (4.8)	244 (3.9)	268 (3.4)	293 (2.5)	313 (2.1)	325 (3.0)
1988	268 (1.8)	202 (5.1)	219 (4.1)	247 (3.1)	270 (2.9)	293 (1.0)	313 (2.2)	324 (3.1)
Southeast								
1990	257 (1.9)	195 (3.2)	210 (4.5)	232 (3.0)	257 (1.6)	282 (2.3)	301 (1.5)	315 (3.5)
1988	259 (1.8)	191 (3.2)	210 (7.0)	237 (2.9)	262 (1.5)*	285 (2.2)	302 (2.2)	315 (5.5)
Central								
1990	261 (2.0)	195 (3.0)	211 (4.5)	237 (3.2)	264 (2.9)	287 (1.8)	306 (2.7)	318 (3.1)
1988	264 (3.4)	193 (5.0)	212 (4.2)	240 (4.4)	268 (3.9)	291 (2.8)	312 (3.1)	324 (6.8)
West								
1990	259 (1.9)	195 (3.6)	210 (3.3)	235 (1.5)	260 (2.4)	285 (2.3)	306 (1.4)	319 (2.6)
1988	260 (1.4)	193 (4.6)	208 (2.8)	237 (2.3)	264 (2.4)	286 (1.9)	305 (1.3)	316 (3.4)

* Statistically significant differences from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

Southeastern region had lower proficiencies than students in the other three regions of the country. The differences between 1988 and 1990 in the performance of Black and Hispanic students do not appear to be significant. However, the performance of White students rose between 1988 and 1990, in particular, for students in the 90th and 75th percentiles. The results by gender indicate that the proficiency of males at each percentile has remained essentially the same in 1990 as in 1988. However, the performance of females, on average, and for those in the 75th, 90th, and 95th percentiles, was higher in 1990 than in 1988.

TABLE 4.2 shows few differences between 1988 and 1990 in eighth graders' average proficiency by percentile. Overall, the results at grade 8 show that in both 1988 and 1990, White students had higher proficiencies in reading than their Black and Hispanic counterparts. On average, White students performed worse in 1990 than in 1988, with the declines occurring most noticeably in the 25th and 50th percentiles. The proficiency of Black and Hispanic students was essentially the same in 1990 as it was in 1988. The results also show that females outperformed their male counterparts. The performance of male students on average and those in the 50th and 75th percentiles was significantly lower in 1990 than in 1988. However, there appear to be no significant differences between 1988 and 1990 in the proficiency of females. The only significant regional difference between 1988 and 1990 was a decrease in performance for students from the Southeast in the 50th percentile. In general, students from the Northeast outperformed students from the Southeast.

TABLE 4.3 contains twelfth graders' average proficiency by percentile. At grade 12, the overall results show that in both 1988 and 1990, White students had higher proficiencies than their Black and Hispanic counterparts. Also, females outperformed males, and students from the Central region outperformed their counterparts in the Southeast. The only significant difference between 1988 and 1990 was a decrease in proficiency for students from the Northeast in the 95th percentile.

STUDENTS' PERFORMANCE ON CONSTRUCTED-RESPONSE QUESTIONS IN 1990

Reading and writing activities often have as their goal the building of deeper meaning. As recent studies of the relationship between reading and writing support, writing prompts some students to be more reflective and evaluative.[36] Similarly, studies of the effects of writing upon the reading of science and social science materials

[36] M. Salvatori, "The Dialogical Nature of Basic Reading and Writing," in D. Bartholomae and A. Petrosky, eds., *Facts, Artifacts, and Counterfacts* (NJ: Boynton/Cook Publishers, 1985) pp.137-166.

TABLE 4.3

Percentiles of Proficiency in Reading at Grade 12, 1988 to 1990*

	Average Proficiency	5th Percentile	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile
NATION								
1990	289 (1.0)	227 (1.7)	243 (1.4)	266 (1.1)	290 (0.7)	313 (1.2)	332 (1.1)	343 (2.0)
1988	287 (0.8)	224 (2.4)	241 (1.4)	266 (1.3)	290 (1.0)	311 (1.0)	329 (1.3)	340 (1.8)
RACE ETHNICITY								
White								
1990	294 (1.0)	235 (3.0)	251 (1.7)	274 (1.3)	296 (1.3)	317 (1.0)	335 (1.5)	346 (1.9)
1988	293 (1.0)	233 (3.8)	249 (1.9)	273 (1.2)	295 (1.0)	315 (1.3)	333 (0.7)	344 (2.2)
Black								
1990	269 (1.9)	215 (8.0)	229 (4.5)	249 (3.5)	270 (2.2)	290 (2.7)	308 (2.5)	319 (3.1)
1988	270 (1.6)	214 (3.5)	229 (3.2)	250 (3.5)	273 (1.4)	292 (1.7)	307 (2.5)	318 (4.3)
Hispanic								
1990	271 (2.5)	209 (6.7)	222 (3.3)	248 (3.5)	274 (4.2)	297 (4.0)	317 (3.7)	329 (3.2)
1988	267 (2.4)	201 (7.0)	218 (3.3)	244 (4.3)	270 (2.3)	293 (1.9)	311 (6.5)	321 (2.4)
GENDER								
Male								
1990	283 (1.3)	218 (2.3)	235 (2.4)	260 (3.2)	286 (1.8)	310 (1.2)	329 (1.1)	340 (1.6)
1988	283 (1.1)	215 (2.2)	233 (1.9)	260 (2.5)	286 (1.5)	308 (1.4)	327 (0.9)	338 (2.2)
Female								
1990	293 (0.9)	239 (2.9)	252 (0.9)	273 (1.3)	294 (1.1)	315 (0.7)	334 (1.4)	345 (3.1)
1988	291 (1.1)	236 (4.7)	249 (1.5)	271 (1.4)	293 (1.3)	313 (1.2)	331 (1.7)	341 (3.2)
REGION								
Northeast								
1990	290 (2.3)	225 (3.5)	242 (4.2)	267 (2.7)	293 (2.7)	316 (3.5)	335 (4.0)	346 (2.6)
1988	287 (2.1)	225 (3.5)	240 (3.4)	266 (1.7)	291 (3.2)	311 (2.6)	328 (2.5)	338 (3.4)*
Southeast								
1990	283 (2.3)	223 (3.9)	238 (4.3)	261 (3.9)	285 (2.2)	307 (1.6)	327 (2.7)	338 (1.3)
1988	284 (1.1)	224 (2.4)	240 (2.7)	263 (2.6)	286 (2.4)	307 (1.7)	325 (2.2)	337 (2.2)
Central								
1990	291 (1.0)	233 (3.5)	249 (1.7)	271 (1.6)	293 (1.4)	313 (0.8)	329 (1.6)	339 (2.7)
1988	289 (1.6)	226 (9.4)	245 (4.6)	269 (2.0)	292 (1.3)	313 (1.3)	331 (1.5)	342 (2.0)
West								
1990	288 (2.6)	228 (4.6)	243 (2.1)	266 (2.4)	287 (2.2)	313 (3.9)	334 (3.6)	346 (6.2)
1988	288 (1.5)	224 (2.2)	240 (3.5)	266 (2.7)	290 (1.5)	312 (1.7)	331 (1.5)	344 (2.3)

* Statistically significant differences from 1990, where alpha equals .05 per comparison between 1988 and 1990. The standard errors of the estimated proficiencies appear in parentheses. It can be said with 95 percent certainty that for each population of interest, the value for the whole population is within plus or minus 2 standard errors of the estimate for each sample.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

have indicated that writing prompts students to do more extensive thinking about a topic, including examining evidence and reconstructing ideas.[37] Thus, when students construct a written response that involves analyzing, interpreting, or evaluating what has been read, they must reason and communicate their ideas effectively in order to be understood.

However, not all students view writing in response to reading as an opportunity to increase learning and, thus, do not take advantage of it.[38] Six questions in the 1990 reading assessment provided students with opportunities to read, think, and write; three questions were based on stories, two were based on expository pieces, and one was based on a document.[39] The six passages and questions are described briefly as follows.

- **"Big Wind"** is a tall tale told by grandpa, who reminisces about the mayhem created by an incredibly big wind. Fourth graders were asked to indicate whether they thought the story was true or not and to tell why — supporting their interpretation with evidence from the story.

- **"Subscription"** is a document. Students at grade 4 were asked to complete a magazine subscription form for themselves and for a gift subscription.

- **"Cat and Canary"** is a story about a cat who wishes he could fly and the trouble he encounters as he attempts to realize his wish. Fourth graders were asked to describe how the cat's feelings changed throughout the story.

- **"Eastern Dragons"** is an informative piece about the symbolic importance of dragons in Eastern cultures. Students at grades 8 and 12 were asked to describe what Eastern dragons symbolized.

- **"Two Were Left"** is a story about a man's fight for survival in the arctic wilderness armed with only a knife and his courage. Students at grades 8 and 12 were asked to explain two functions of the knife in the story.

- **"Allied Mission"** is an historical piece about the Allied forces in Russia and the mission to Archangel. Twelfth graders were asked to explain why the mission to Archangel failed.

[37] J. Langer and A. Applebee, *How Writing Shapes Thinking* (Urbana, IL: National Council of Teachers of English, 1987).

[38] A.M. Penrose, *Examining the Role of Writing in Learning Factual Versus Abstract Material*. Paper presented at the American Educational Research Association (New Orleans, LA, April, 1988).

[39] Only 1 percent of the total number of questions asked at each grade level required students to construct a response in the 1990 assessment. However, in 1992, 50 percent of the questions posed at each grade level required constructed responses.

FIGURE 4.1
Story Read by Eighth- and Twelfth-Grade Students in 1990

TWO WERE LEFT
by Hugh B. Cave

On the third night of hunger, Noni thought of the dog. Nothing of flesh and blood lived upon the floating ice island except those two.

In the breakup, Noni had lost his sled, his food, his furs, even his knife. He had saved only Nimuk, his great devoted husky. And now the two, marooned on the ice, eyed each other warily — each keeping his distance.

Noni's love for Nimuk was real, very real — as real as hunger and cold nights and the gnawing pain of his injured leg. But the men of his village killed their dogs when food was scarce, didn't they? And without thinking twice about it.

And Nimuk, he told himself, when hungry enough would seek food. "One of us will soon be eating the other, Noni thought. "So . . ." He could not kill the dog with his bare hands. Nimuk was powerful and much fresher than he. A weapon, then, was needed.

Removing his mittens, he unstrapped the braces from his leg. When he had hurt his leg a few weeks before, he had made the brace from bits of harness and two thin strips of iron. Kneeling now, he wedged one of the iron strips into a crack in the ice and began to rub the other against it with firm, slow strokes. Nimuk watched him, and it seemed to Noni that the dog's eyes glowed more brightly. He worked on, trying not to remember why. The slab of iron had an edge now. It had begun to take shape. Daylight found his task completed. Noni pulled the finished knife from the ice and thumbed its edge. The sun's glare reflected from it, stabbed his eyes and momentarily blinded him. Noni steeled himself.

"Here, Nimuk!" he called softly.

The dog suspiciously watched him.

Nimuk came closer. Noni read fear in the animal's gaze. He read hunger and suffering in the dog's labored breathing and awkward crouch. His heart wept. He hated himself and fought against it. Closer Nimuk came, aware of his intentions. Now Noni felt a thickening in his throat. He saw the dog's eyes, and they were wells of suffering.

Now! Now was the time to strike!

A great sob shook Noni's kneeling body. He cursed the knife. He swayed blindly, flung the weapon far from him. With empty hands outstretched, he stumbled toward the dog and fell.

The dog growled as he circled the boys body. And now Noni was sick with fear.

In flinging away the knife, he had left himself defenseless. He was too weak to crawl after it now. He was at Nimuk's mercy, and Nimuk was hungry.

The dog had circled him and was creeping up from behind. Noni heard the rattle in the savage throat.

He shut his eyes, praying that the attack might be swift. He felt the dog's feet against his leg, the hot rush of Nimuk's breath against his neck. A scream gathered in the boy's throat.

Then he felt the dog's hot tongue licking his face.

Noni's eyes opened. Crying softly, he thrust out an arm and drew the dog's head down against his own . . .

The plane came out of the south an hour later. Its pilot, a young man of the coast patrol, looked down and saw the large floating iceberg. And he saw something flashing.

It was the sun gleaming on something shiny, which moved. His curiosity aroused, the pilot banked his ship and descended. Now he saw, in the shadow of the peak of ice, a dark, still shape that appeared to be human. Or were there two shapes?

He set this ship down in a water lane and investigated. There were two shapes, boy and dog. The boy was unconscious but alive. The dog whined feebly but was too weak to move.

The gleaming object which had trapped the pilot's attention was a crude knife stuck point first into the ice a little distance away, and quivering in the wind.

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The passages included in the assessment were similar to the type of reading material that students are given in school, making them relatively familiar. Each constructed-response item was accompanied by a unique scoring guide that defined levels of success in answering the question given. The guides defined between three and six levels of responses, depending on the question. At each step of the item development and review process, the scoring guide for a given constructed-response question was scrutinized and discussed, and was revised as necessary. In addition, each scoring guide was subject to final review and revision, if necessary, based on an examination of actual assessment responses. A variety of students' responses to each question were examined to determine the appropriateness of the scoring guide.

FIGURE 4.1 contains the text of the story "Two Were Left," which appeared at grades 8 and 12.

As indicated in the following description of the scoring criteria for the "Two Were Left" question, the scoring reflected the complexity of students' thinking. Students were asked to answer the following question: "What two functions does the knife have in the story?" The following response is typical of answers that were rated as **unacceptable** because they did not discuss two functions of the knife, demonstrated inaccurate interpretations, or misstated events in the story.

"The knife was used to kill dogs."

In contrast, **minimal** responses provided literal interpretations of the story. In the case of "Two Were Left," minimal responses stated that the knife might have been used as a weapon, but was actually the gleaming object that attracted the pilot's attention.

"The knife functions as a weapon and a signal."

Responses that went beyond a single reason, stating an interpretation or generalization and providing at least two appropriate reasons or one elaborated reason were rated as **elaborated**. An elaborated response to the constructed-response question for "Two Were Left" states that the knife served a symbolic function. It involves elaboration about the ironic twist in the passage in which the knife beckons the pilot to the iceberg, saving the boy and the dog.

"It serves as a symbol for bringing down life or death, it could have killed the dog and most likely both would die, or, as it did, it signaled for help, resulting in both the boy and the dog to live."

FIGURE 4.2 contains the magazine subscription that fourth graders were asked to complete in 1990.

FIGURE 4.2
Form Completed by Fourth-Grade Students in 1990

Here are subscription blanks for the National Geographic's *World* magazine. Susan Riley wants to order a subscription for herself and has filled out an order form. She also wants to give a one-year subscription to her cousin, Donald Williams, who lives at 365 Church Street, Kingston, PA 08659. Fill out all the information that Susan should complete.

WORLD Subscription Order Form

To start your *own* subscription:

Fill in the form below.

MY NAME Susan Riley (PLEASE PRINT) 88106

STREET 735 Telshore Blvd.

CITY, STATE, ZIP CODE Las Cruces N.M. 88005

☑ 1 year ☐ 2 years* I enclose $ 10.95 for my subscription. (Please make check payable to National Geographic WORLD and insert in pocket below.)

▼ (FOLD HERE – DO NOT DETACH)

To give a WORLD *gift* subscription:

Fill in the form below.

MY NAME _____ (PLEASE PRINT)

STREET _____

CITY, STATE, ZIP CODE _____

GIFT FOR _____ (PLEASE PRINT) 88106

STREET _____

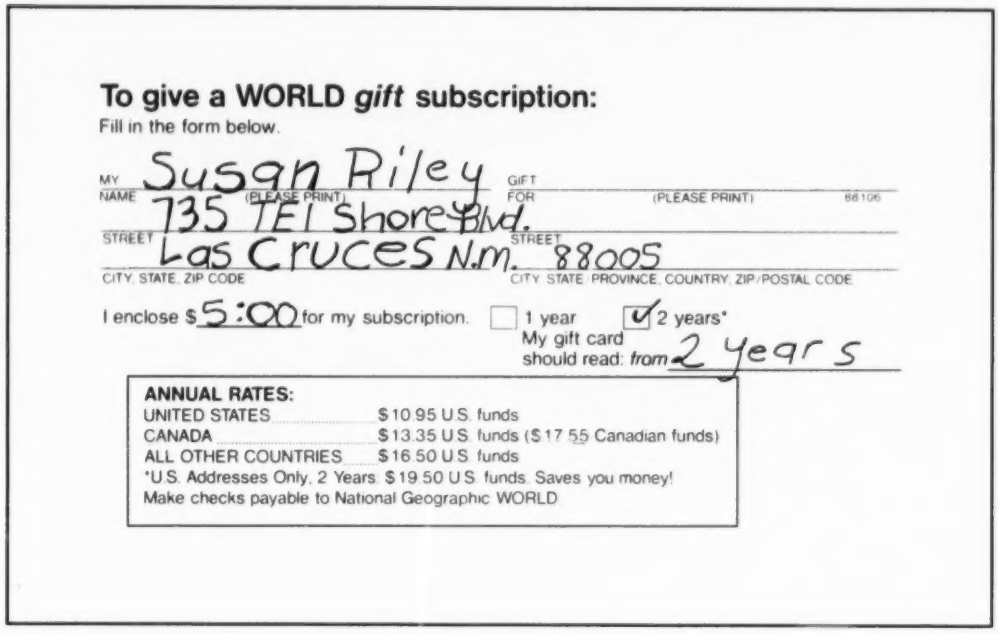
CITY, STATE/PROVINCE, COUNTRY, ZIP/POSTAL CODE _____

I enclose $_____ for my subscription. ☐ 1 year ☐ 2 years*

My gift card should read: *from* _____

ANNUAL RATES:
UNITED STATES ..... $10.95 U. S. funds
CANADA ..... $13.35 U. S. funds ($17.55 Canadian funds)
ALL OTHER COUNTRIES..... $16.50 U. S. funds
*U. S. Addresses Only, 2 Years: $19.50 U. S. funds. Saves you money!
Make checks payable to National Geographic WORLD.

Responses scored as being **incomplete** omitted information and contained inappropriate information. The following response is typical of those that received a score of **incomplete**.



To give a WORLD *gift* subscription:

Fill in the form below.

MY NAME (PLEASE PRINT) Susan Riley

STREET 735 TEI Shore Blvd.

CITY, STATE, ZIP CODE Las Cruces N.M. 88005

GIFT FOR (PLEASE PRINT)

STREET

CITY, STATE, PROVINCE, COUNTRY, ZIP/POSTAL CODE

I enclose $5:00 for my subscription. ☐ 1 year ☑ 2 years*

My gift card should read: *from* 2 years

ANNUAL RATES:

UNITED STATES ..... $10.95 U.S. funds

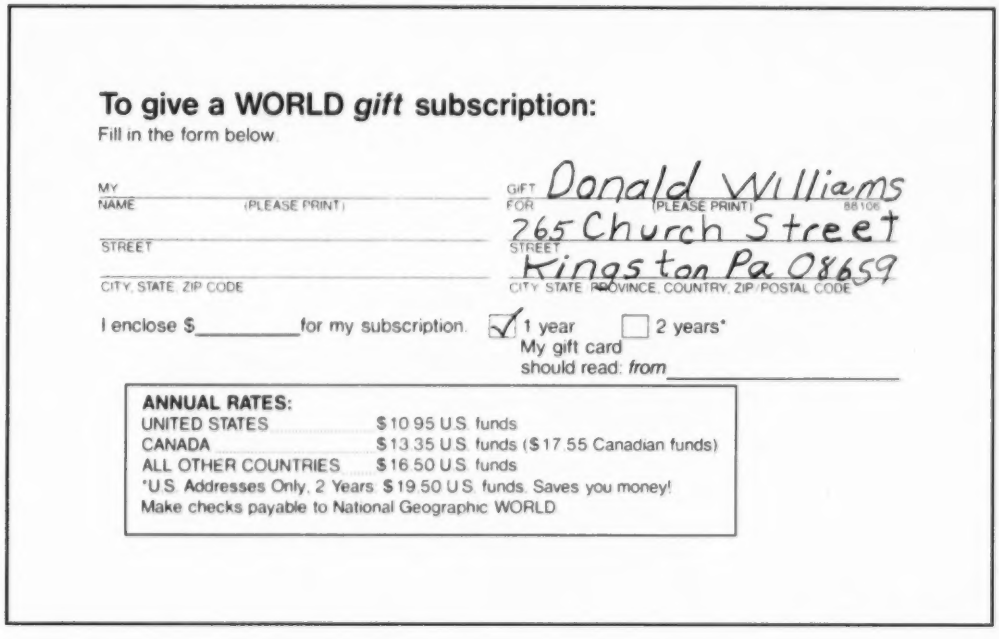
CANADA ..... $13.35 U.S. funds ($17.55 Canadian funds)

ALL OTHER COUNTRIES ..... $16.50 U.S. funds

*U.S. Addresses Only, 2 Years $19.50 U.S. funds. Saves you money!

Make checks payable to National Geographic WORLD

Responses scored as being **satisfactory** contained all of the necessary information for ordering a magazine gift subscription, including filling out the gift portion of the form correctly. The following response is typical of responses that were scored as **satisfactory**.



To give a WORLD *gift* subscription:

Fill in the form below.

MY NAME (PLEASE PRINT)

STREET

CITY, STATE, ZIP CODE

GIFT FOR (PLEASE PRINT) Donald Williams

STREET 265 Church Street

CITY, STATE, PROVINCE, COUNTRY, ZIP/POSTAL CODE Kingston Pa 08659

I enclose $_____ for my subscription. ☑ 1 year ☐ 2 years*

My gift card should read: *from* _____

ANNUAL RATES:

UNITED STATES ..... $10.95 U.S. funds

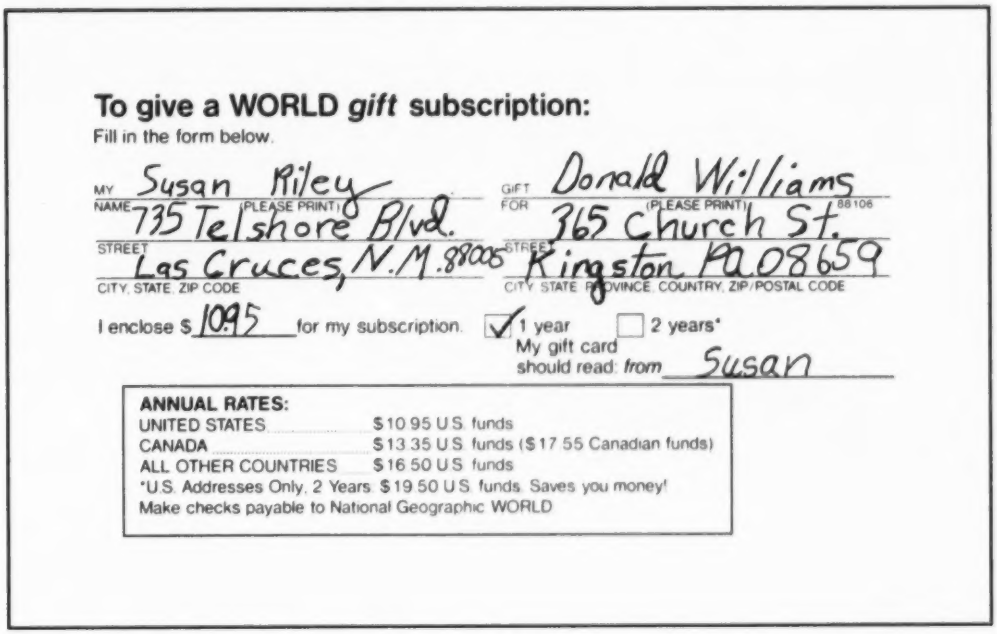
CANADA ..... $13.35 U.S. funds ($17.55 Canadian funds)

ALL OTHER COUNTRIES ..... $16.50 U.S. funds

*U.S. Addresses Only, 2 Years $19.50 U.S. funds. Saves you money!

Make checks payable to National Geographic WORLD

Responses scored as being **elaborated** went beyond the basic information required for ordering a magazine subscription to include information about the amount of money enclosed and an indication of what the gift card should say. These responses contained a complete and accurate rendering of information. The following response is typical of responses that were scored as **elaborated**.



To give a WORLD *gift* subscription:

Fill in the form below.

MY NAME (PLEASE PRINT): Susan Riley
STREET: 735 Telshore Blvd.
CITY, STATE, ZIP CODE: Las Cruces, N.M. 88005

GIFT FOR (PLEASE PRINT): Donald Williams
STREET: 365 Church St. 88106
CITY, STATE, PROVINCE, COUNTRY, ZIP/POSTAL CODE: Kingston, PA 08659

I enclose $ 10.95 for my subscription. ☑ 1 year ☐ 2 years*

My gift card should read: *from* Susan

ANNUAL RATES:

UNITED STATES	$10.95 U.S. funds
CANADA	$13.35 U.S. funds ($17.55 Canadian funds)
ALL OTHER COUNTRIES	$16.50 U.S. funds

*U.S. Addresses Only. 2 Years $19.50 U.S. funds. Saves you money!

Make checks payable to National Geographic WORLD

TABLE 4.4 summarizes the percentages of students responding at various levels to the constructed-response questions contained in the 1990 reading assessment.

As in previous NAEP reading assessments, students at all ages had difficulty going beyond a general understanding of a passage to discuss and explain what they had read.[40] The responses of the majority of students to the constructed-response questions indicated that students were able to grasp some initial meaning, but far fewer were able to examine meaning by providing arguments or evidence to support their interpretations.

Fourth graders, overall, appeared to have difficulty constructing even acceptable responses. The constructed-response question for the "Big Wind" tale asked students to tell whether they thought the story was true, and to support their answer with evidence from the story. The majority of fourth-grade students — 71 percent — provided a minimally acceptable response to the "Big Wind" question, indicating that they were able to

[40] J. Langer, A. Applebee, I. Mullis, and M. Foertsch, *Learning to Read in Our Nation's Schools* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990.)

I. Mullis, J. Dossey, M. Foertsch, L. Jones, and C. Gentile, *Trends in Academic Progress* (Washington, D.C.: National Center for Education Statistics, 1991.)

TABLE 4.4

Percentages of Students Responding to Constructed-Response Items (Grades 4, 8, and 12), 1990

	PERCENT OF STUDENTS		
	Grade 4	**Grade 8**	**Grade 12**
Big Wind			
no interpretation	23 (0.7)	—	—
unacceptable	6 (0.4)	—	—
minimally acceptable	71 (0.8)	—	—
satisfactory	0 (0.0)	—	—
elaborated	0 (0.1)	—	—
Subscription			
incomplete	59 (1.3)	—	—
satisfactory	16 (0.9)	—	—
elaborated	15 (0.9)	—	—
Cat and Canary			
vague	69 (1.5)	—	—
partially correct	9 (1.1)	—	—
correct	22 (1.1)	—	—
elaborated	0 (0.1)	—	—
Eastern Dragons			
incomplete	—	45 (1.1)	31 (1.2)
satisfactory	—	32 (0.9)	37 (1.2)
elaborated	—	18 (0.9)	26 (1.1)
Two Were Left			
unacceptable	—	54 (1.3)	29 (1.0)
satisfactory	—	46 (1.4)	59 (1.1)
elaborated	—	1 (0.2)	7 (0.6)
Allied Mission			
vague	—	—	45 (1.2)
inadequate support	—	—	23 (1.0)
adequate support	—	—	25 (1.1)
elaborated	—	—	6 (0.5)

Tested for statistically significant differences, where alpha equals .05 per set of comparisons between each response category, within a grade level. Dashes indicate that this task was not administered at this grade level. Percentages may not total 100 percent because some students omitted or did not reach the constructed-response item.

Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990. (National Center for Education Statistics, U.S. Department of Education, 1992).

provide an answer without giving appropriate support or detail. The majority of students also provided unacceptable answers to the "Subscription" document task and the constructed-response question accompanying the "Cat and Canary" story. Fifty-nine percent of the students who attempted to complete the magazine subscription form — and 69 percent of those who attempted to describe how the main character's feelings changed in

the "Cat and Canary" story — demonstrated little understanding of the essential information contained in these texts. Essentially no fourth-grade students provided elaborated answers that went beyond demonstrating a basic understanding of the passage to either the "Big Wind" or "Cat and Canary" questions.

In general, eighth-grade students were split fairly evenly between those who did and those who did not demonstrate a grasp of the information in the "Eastern Dragons" passage. In response to the eighth-grade informative task that asked students to describe what Eastern dragons symbolized, 50 percent of the students gave minimal or better responses and 45 percent provided incomplete answers. For the eighth-grade literary passage titled "Two Were Left," 54 percent of the students gave inaccurate responses and 47 percent provided responses rated as minimal or better to a question asking students to explain the two functions of the knife in the story.

Overall, the majority of twelfth graders demonstrated some understanding of the passages they were asked to read. For the "Eastern Dragons" task, 63 percent provided minimally acceptable or better responses, and 66 percent of the twelfth graders provided minimal or better responses to the "Two Were Left" passage. However, for the "Allied Mission" task that required students to explain why the mission to Archangel failed, the majority of students — 68 percent — constructed vague answers or offered inadequate support for their answers, and 31 percent provided adequately supported or elaborated answers.

The generally low performance on constructed-response questions in 1990 suggests the need for students to be provided with more opportunities to develop their ability to think about and communicate what they have learned. However, as indicated in the discussion of writing activities and instruction found in Chapter 2, few students reported frequently being asked by their teachers to engage in thought-provoking tasks such as writing about what they read or writing reports. This is cause for concern because writing can be a powerful tool for enhancing thinking and learning. Writing activities can contribute to better learning — especially of less familiar material — than when reading is done without some form of writing.[41] The use of reading and writing together can engage learners in a greater variety of reasoning operations than when writing or reading are presented separately, or when students are given a variety of other tasks to accompany their reading. The nature of thinking associated with different types of writing tasks varies, however, depending on the nature of the writing task, the topic being pursued, and the

[41] D.A. Hayes, "The potential for directing study in combined reading and writing activity," *Journal of Reading Behaviour*, 1987, 19:333-352.
J.A. Langer and A.N. Applebee, *How Writing Shapes Thinking* (Urbana IL: National Council of Teachers of English, 1987).

purpose of the writing task. For example, extended writing tasks have been shown to prompt a wider variety of reasoning operations than activities that require students to supply very brief responses, such as those found in workbooks.

SUMMARY Across grade levels, the results indicate few changes between 1988 and 1990 in students' reading achievement. Results for demographic subgroups show that White fourth graders' average proficiency increased between 1988 and 1990; however, that of White eighth graders decreased. The performance of White fourth graders in the 75th and 90th percentiles increased significantly in 1990. However, the performance of White eighth graders in the 25th and 50th percentiles decreased in 1990.

The results by gender indicate that the average proficiency of fourth-grade females increased while that of eighth-grade males decreased significantly between 1988 and 1990. Increases in performance between 1988 and 1990 were evident for fourth-grade females in the 75th, 90th, and 95th percentiles. However, the performance of eighth-grade males in the 50th and 75th percentiles declined.

The only significant differences by region between 1988 and 1990 were a decrease in performance for twelfth graders from the Northeast in the 95th percentile, and an increase for eighth graders from the Southeast in the 50th percentile.

For the several constructed-response questions included in the 1990 assessment, students had difficulty constructing thoughtful responses that were rated minimal or better. At each grade level, fewer students gave elaborated answers than provided incomplete, vague, inaccurate, or minimal answers to various constructed-response questions. The majority of fourth graders provided unsatisfactory or only minimally acceptable responses to two literary passages and essentially none provided elaborated responses. Fifty-nine percent of the students at grade 4 who attempted the "Subscription" document task demonstrated little understanding of how to complete the form appropriately.

In general, eighth-grade students were split fairly evenly between those who did and did not demonstrate a grasp of the information in a social studies passage. In response to the informative task "Eastern Dragons," half of the eighth graders gave minimal or better responses while 45 percent provided incomplete answers. For the literary passage titled "Two Were Left," 54 percent of the eighth graders gave inaccurate responses while 47 percent provided responses rated as minimal or better.

The majority of twelfth graders demonstrated some understanding of the passages they were asked to read. Approximately two-thirds of the twelfth graders gave minimally acceptable or better responses to the "Eastern Dragons" and "Two Were Left" passages. However, for the "Allied Mission" passage, the majority of twelfth graders — 68 percent — constructed vague answers or offered inadequate support for their answers.

PROCEDURAL APPENDIX

A DESCRIPTION OF THE 1988 AND 1990 NAEP READING ASSESSMENTS

This appendix provides more detailed information about the methods and procedures used in NAEP's 1988 and 1990 reading assessments. *The NAEP 1987-1988 Technical Report* and *The NAEP 1990 Technical Report* provide even more extensive information about these procedures.

INTRODUCTION The National Assessment of Educational Progress (NAEP) is an ongoing, congressionally mandated project established in 1969 to obtain comprehensive and dependable data on the educational achievement of American students. From its inception until 1980, NAEP conducted annual assessments of 9-, 13-, and 17-year-olds attending public and private schools, and it has carried out biennial assessments since then. It remains the only regularly conducted educational survey at the elementary-, middle-, and high-school levels.

Across the years, NAEP has evaluated students' proficiencies in reading, writing, mathematics, science, and social studies, as well as literature, art, music, citizenship, computer competence, and career and occupational development. Several of these subjects have been assessed many times, permitting an analysis of trends in student achievement.

NAEP assessments are developed through a broad-based consensus process involving educators, scholars, and citizens representative of many diverse constituencies and points of view. Panels of experts developed the 1988 and 1990 reading assessment objectives, proposing goals that they felt students should achieve in the course of their education. After extensive reviews, the objectives were given to item writers who developed assessment questions to fit the specifications set forth in the objectives. A limited set of reading background questions was prepared, in addition to the general background and cognitive questions, to provide a basis for examining policy-relevant issues. These background questions asked students for information on the kinds of reading instruction they had received, as well as on their reading activities, attitudes, and resources.

All items for the 1988 and 1990 assessments — cognitive and background alike — underwent intensive reviews by subject-matter and measurement specialists and by sensitivity reviewers whose purpose was to eliminate any material potentially biased or insensitive toward particular groups. The items were then field tested, revised, and administered to a stratified, multi-stage probability sample selected so that the assessment results could be generalized to the national population.

Following each NAEP assessment, the results are published in reports that describe patterns and trends in achievement in a given subject area. The NAEP reports are widely disseminated to legislators, educators, and others concerned with improving education in this country.

THE 1988 AND 1990 READING ASSESSMENTS

The objectives and items for the 1988 and 1990 reading assessments were developed using a broad-based consensus process involving university professors, classroom teachers, social science researchers, school administrators, and curriculum specialists from across the country.[42] As with previous NAEP reading assessments, the 1988 and 1990 reading assessments measured students' ability to read based on a variety of passages, ranging from textbook materials, documents, and news articles to poems, essays, and stories. Passages were grouped into three categories — literary text, informational text, and documents — because these categories represent the types of materials that students commonly encounter in and out of school and are expected to be capable of reading. Some of the passages and associated questions that appeared in the 1988 reading assessment also appeared in the 1990 reading assessment, making it possible to measure changes in performance.

THE 1990 OBJECTIVES

The 1990 reading assessment, an extension of the 1988 assessment, was structured to examine comprehension as it occurs in two modes of reading: "Reading to Construct Meaning" and "Reading to Examine or Extend Meaning." Although these modes of reading are intertwined in most actual reading experiences, they were separated in the assessment to clarify the distinction between them.

In the "Reading to Construct Meaning" mode, readers direct their efforts towards building a general model of the text's meaning and significance based on their expectations, existing knowledge, and perceptions of the new information encountered during the reading process. Their primary purposes are to find the gist of the author's message, capture details of personal interest or immediate importance, review major themes and main ideas, recognize similarities or differences with their own ideas or other texts they have read, or evaluate the text's potential to provide opportunities for learning or enjoyment. Alternatively, individuals may read to ascertain general linkages among events in a story, a historical account, or a biological process.

In "Reading to Examine Meaning," readers try to broaden and deepen their comprehension of the text by filling in details that embellish their general understanding, explore relations among ideas that are not immediately apparent, and use their existing knowledge to establish new connections with ideas from the text. Readers may read for nuances to predict outcomes, infer links in a causal chain of reasoning, evaluate the text according to explicit or implicit criteria, or develop and test their inferences.

In document reading, the two modes of comprehension are "Locate or Compare Information" and "Evaluate Information," which reflect the different strategies involved in reading documents. Essentially, the two document reading modes differ from those in informational and literary text because they place less emphasis on print and more emphasis on graphic elements.

SAMPLING, DATA COLLECTION, AND SCORING

The overall structures of the 1988 and 1990 assessments used a focused-BIB spiral design whereby not all students respond to all items in the assessment. This enables broad coverage of the subject area being assessed while minimizing the burden for any one student. In both 1988 and 1990, each assessment booklet required about one hour. Students at grades 8 and 12 were given five minutes to complete each of two background questionnaires — one requesting general background information and the other requesting information on their reading experiences at home and in the classroom — and 45 minutes for the reading passages and accompanying questions. At grade 4, the background questions were read to students, which took about 15 minutes. Fourth graders were given 30 minutes to respond to the reading content questions. Most of the content questions were multiple choice, but some open-ended questions were also included. In 1988, 83 cognitive questions were administered at grade 4, 100 questions at grade 8, and 110 questions at grade 12. In 1990, 68 cognitive questions

[42] *1986 and 1988 Reading Objectives* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, June 1987).

Reading Objectives: 1990 Assessment (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, April 1989).

were administered at grade 4, 95 questions at grade 8, and 110 questions at grade 12. Some of the items were given only at one grade, while others were given at more than one grade.

For both 1988 and 1990, seven 15-minute blocks of cognitive reading items were prepared at grades 8 and 12, and seven 10-minute blocks at grade 4. The balanced incomplete block or "BIB" part of the 1988 and 1990 NAEP design assigned these seven reading blocks to booklets in such a way that each block appeared in three booklets in each of the three possible positions and each pair of blocks appeared in one of seven booklets. Approximately 1,800 students per assessment responded to each question. The "spiraling" part of the method cycled the booklets for administration with booklets from the other subject areas assessed so that typically only a few students in any one session received the same booklet.

Sampling and data collection activities for the 1988 and 1990 assessments were conducted by WESTAT, Inc. As with all NAEP assessments, the 1988 and 1990 assessments were based on a deeply stratified, three-stage sampling design. The first stage involved stratifying primary sampling units (typically aggregates of contiguous counties, but sometimes a single county) by region and community type and making a random selection. Second, within each selected unit, public and private schools were enumerated, stratified, and randomly selected. Finally, students were randomly selected from each school for participation in NAEP and then randomly assigned to assessment sessions. TABLES A.1 and A.2 present the student and school sample sizes for the 1988 and 1990 reading assessments of fourth, eighth, and twelfth graders, as well as the school cooperation and student response rates.

TABLE A.1

Student and School Sample Sizes: 1988

Grades	Number of Students	Number of Schools	Percent of Schools Participating	Percent of Student Completion
4	4,534	327	88.7	92.8
8	4,404	399	86.6	87.8
12	4,250	304	82.8	78.5
Total	13,188	1,030		

Note: These figures were obtained from the *Reports on NAEP Field Operation and Data Collection Activities*, prepared by Westat, Inc. Although sampled schools that refused to participate were replaced, school cooperation rates are computed based on the schools originally selected for participation in the assessments. The student completion rates represent the percentage of students assessed of those invited to be assessed, including in follow-up sessions when necessary.

TABLE A.2

Student and School Sample Sizes: 1990

Grades	Number of Students	Number of Schools	Percent of Schools Participating	Percent of Student Completion
4	8,480	523	88.6	92.9
8	8,725	402	86.7	89.0
12	8,351	301	81.3	81.0
Total	25,556	1,226		

Note: These figures were obtained from the *Reports on NAEP Field Operation and Data Collection Activities*, prepared by Westat, Inc. Although sampled schools that refused to participate were replaced, school cooperation rates are computed based on the schools originally selected for participation in the assessments. The student completion rates represent the percentage of students assessed of those invited to be assessed, including those in follow-up sessions when necessary.

All data were collected by trained field staff. Some students sampled (less than 5 percent) were excluded from the assessment because of limited English proficiency or severe handicap. In 1984, NAEP began collecting descriptive information on these excluded students.

All open-ended responses were scored by professional readers who were trained to use the evaluative criteria developed for each question. The booklets were then scanned and information was transcribed to the NAEP database. All data collection and processing activities were conducted with attention to rigorous quality control procedures.

SCORING THE CONSTRUCTED-RESPONSE QUESTIONS A primary trait scoring guide was developed for each constructed-response reading question to focus raters' attention on how successfully students' responses accomplished the task set forth in the prompt. Examples of constructed-response scoring guides are contained in FIGURES A.1 and A.2.

FIGURE A.1

"Two Were Left," Grades 8 and 12

Question: What two functions did the knife have in the story?

LEVEL OF TASK ACCOMPLISHMENT	
1	Does not present two functions for the knife, demonstrates inaccurate interpretation, misstates events in the story.
2	States that the knife might have been used as a weapon but was actually the gleaming object which attracted the pilot's attention; response is accurate but literal in its interpretation of the story.
3	Accurately states functions of the knife in the story with elaboration about the ironic twist in the passage of the knife beckoning the pilot to the iceberg and saving the boy and dog's lives; writer understands the symbolic nature of the knife in the story.

FIGURE A.2

National Geographic World Subscription, Grade 4

Evaluation will be based on correct placement of all items that need to be entered on subscription blank to complete the order for the gift subscription for Donald Williams.

LEVEL OF TASK ACCOMPLISHMENT	
1	Incorrect response with few blanks completed and/or blanks completed incorrectly; this may include using the wrong names in either or both parts of the form.
2	Fairly complete and accurate rendering of information needed to enter gift subscription; essentially, the gift portion has been filled out correctly. A few blanks may not have been filled in or may have been completed incorrectly, but the gist of the two sides of the blank are accurate enough to indicate that the student understood the format of the subscription blank (gift blank) and the task.
3	Complete and accurate rendering of necessary information.

A group of trained raters carried out the scoring over a period of several months. Prior to scoring the responses to each task, an intensive training session was conducted by NAEP staff in the use of the scoring guide for that task. Twenty percent of the responses were scored by a second rater to give an estimate of interrater reliabilities. These are summarized in TABLE A.3. Following the scoring of students' written responses, the information from the booklets was transcribed to the NAEP database. All data collection and processing activities were conducted with attention to rigorous quality control procedures.

TABLE A.3

Correlation Coefficients and Percentages of Exact Score Point Agreement for 1990 Constructed-Response Reading Questions

Grade	Mean Percent Agreement	Range of Agreement
4	88.4	77.7-93.9
8	90.0	87.5-93.4
12	88.3	83.8-91.3

THE DATA ANALYSES Once the reading data had been processed, they were weighted in accordance with the population structure. The weighting reflects the probability of selection of each student, adjusts for nonresponse, and, through poststratification, ensures that the representation of certain subpopulations corresponds to figures from the Census and the Current Population Survey. (*The NAEP 1990 Technical Report* provides further details on weighting and its effects on proficiency estimates.)

Analyses included computing the percentages of students giving various responses to the questions and estimating the average percentage of students responding correctly to particular sets of items. Because a nationally representative sample of students answered each question, these results are also available for subgroups of students as defined by gender, race/ethnicity, region, and other characteristics.

Item response theory (IRT) technology was used to estimate average reading proficiency for the nation and various subpopulations. The main purpose of IRT analysis is to provide a common scale on which performance can be compared across groups and subgroups whether or not they are tested using the same sets of items.

IRT defines the probability of answering an item correctly as a mathematical function of proficiency or skill. NAEP's estimated statistics describing national and subgroup proficiency are computed as expectations of the values of the figures that would have been obtained had individual proficiencies been observed, given the data that were in fact observed — that is, responses to the cognitive and background items.[43]

The NAEP assessments also make it possible to examine relationships between student performance and a variety of background factors, relating achievement to one variable or composite variables. In developing background questions for the assessments, NAEP staff and consultants rely on existing educational research. Each question is carefully crafted so that the data it yields can be used to confirm and build on what is known about factors related to academic performance. The analysis of students' responses to the background questions can then be used to highlight particular relationships of interest — for example, the relationship between students' home and school environments and their performance in the NAEP assessments. These analyses, however, do not reveal the underlying causes of these relationships, which may be influenced by a number of variables. Similarly, the assessments do not capture the influence of unmeasured variables. Therefore, the results are most useful when they are considered in combination with other knowledge about the student population and the educational system, such as trends in instruction, changes in the school-age population, and societal demands and expectations.

ESTIMATING VARIABILITY Because the statistics presented in this report are estimates of group and subgroup performance based on samples of students, rather than the values that could be calculated if every student in the nation answered every question, it is important to have measures of the degree of uncertainty of the estimates. In addition to providing estimates of percentages of students and their proficiency, this report also provides information about the uncertainty of each statistic.

Two components of uncertainty are accounted for in the variability of statistics based on proficiency: the uncertainty due to sampling only a relatively small number of students and the uncertainty due to sampling only a relatively small number of questions. The variability of estimates of percentages of students having certain background characteristics or answering a certain cognitive question correctly is accounted for by the first component alone. Because NAEP uses complex sampling procedures, conventional formulas for estimating sampling variability that assume simple random sampling are inappropriate and NAEP uses a jackknife replication procedure to estimate standard errors. The jackknife standard error provides a reasonable measure of uncertainty for any information about students that can be observed without error, but each student typically responds to so few items within any content area that the proficiency measurement for

[43] For theoretical justification of the procedures employed, see R.J. Mislevy, *ETS Research Bulletin #88-54-ONR: Randomization-based Inferences About Latent Variables from Complex Samples* (Princeton, NJ: Educational Testing Service, 1988). For computational details, see *The NAEP 1987-88 Technical Report* (Princeton, NJ: Educational Testing Service, National Assessment of Educational Progress, 1990).

any single student would be imprecise. In this case, using plausible values technology makes it possible to describe the performance of groups and subgroups of students, but the underlying imprecision that makes this step necessary adds an additional component of variability to statistics based on NAEP proficiencies.[44]

DRAWING INFERENCES FROM THE RESULTS

The use of confidence intervals, based on the standard errors, provides a way to make inferences about the population means and proportions in a manner that reflects the uncertainty associated with the sample estimates. An estimated sample mean proficiency ± 2 standard errors represents a 95 percent confidence interval for the corresponding population quantity. This means that with approximately 95 percent certainty, the average performance of the entire population of interest is within ± 2 standard errors of the sample mean.

As an example, suppose that the average reading proficiency of students in a particular group was 256, with a standard error of 1.2. A 95 percent confidence interval for the population quantity would be as follows:

Mean ± 2 standard errors = 256 ± 2 (1.2) = 256 ± 2.4 =
256 – 2.4 and 256 + 2.4 = 253.6, 258.4

Intervals constructed in this way have a 95 percent probability of containing the true population values.

Similar confidence intervals can be constructed for percentages, provided that the percentages are not extremely large (greater than 90) or extremely small (less than 10). For extreme percentages, confidence intervals constructed in the above manner may not be appropriate, and procedures for obtaining accurate confidence intervals are quite complicated.

To determine whether there is a real difference between the mean proficiency (or proportion of a certain attribute) for two groups in the population, one needs to obtain an estimate of the degree of uncertainty associated with the difference between the proficiency means or proportions of these groups for the sample. This estimate of the degree of uncertainty — called the standard error of the difference between the groups — is obtained by taking the square of each group's standard error, summing these squared standard errors, and then taking the square root of this sum, assuming the two groups are independent.

Similar to the manner in which the standard error for an individual group mean or proportion is used, the standard error of the difference can be used to help determine whether differences between assessment years are real. If one wants to hold the certainty level for a specific set of comparisons at a particular level (e.g., 95), adjustments (called multiple-comparisons procedures) need to be made. One such procedure — the Bonferroni method — was used to form confidence intervals for the trend differences between 1990 and 1988. Multiple-comparison tests were performed for all parts of means within the following families:

a) Marginal main effects for all reporting variables (e.g. a comparison of all six pairs of mean proficiencies for the four regions or comparisons of proportions of students in a series of subpopulations defined by some characteristic.) Each reporting variable defines a separate family of the n(n-1)/2 possible comparisons between all pairs of the n categories of the variable.

b) Conditional main effects (e.g., comparisons of all pairs of regional means for males or for Hispanic students). These were computed for all reporting variables conditional on membership in categories of the following major reporting variables: gender, race/ethnicity, region, age, type of community, parents' education, and type of school.

[44] For further details, see E.G. Johnson, "Considerations and Techniques for the Analysis of NAEP Data," in *Journal of Educational Statistics* (December 1989).

c) Two way interactions (e.g., race by region) for all main reporting variables by all reporting variables. Each family of comparisons consists of all possible t-tests of the form

$$\{(Y_{ij} - Y_{ik}) - (Y_{hj} - Y_{hk})\}/(SE^2_{ij} + SE^2_{ik} + SE^2_{hj} + SE^2_{hk})^{1/2}$$

where i and h are two categories of one reporting variable and j and k are two categories of the other. The Hochberg stagewise Bonferroni procedure[45] was also used for testing the significance of changes in reading performance between 1988 and 1990. Multiple comparison tests were performed for subgroup mean differences between 1988 and 1990 within the above families a and b.

NAEP REPORTING GROUPS NAEP reports performance for the nation and for groups of students defined by shared characteristics. In addition to national results, this report contains information about subgroups defined by region of the country, sex, race/ethnicity, and size and type of community. The following section defines these and other subpopulations referred to in this report.

REGION The country has been divided into four regions: Northeast, Southeast, Central, and West. States included in each region are shown on the following map.

GENDER Results are reported for males and females.

RACE/ETHNICITY Results are presented for Black, White, and Hispanic students, based on students' identification of their race/ethnicity according to the following categories: White, Black, Hispanic, Asian or Pacific Islander, American Indian or Alaskan Native, and Other. Although the sample sizes were insufficient to permit separate reliable estimates for all subgroups defined by race/ethnicity, all students were included in computing the national estimates of average reading performance.

SIZE AND TYPE OF COMMUNITY Three extreme community types of special interest are defined by an occupational profile of the area served by the school, as well as by the size of the community in which the school is located. This is the only reporting category that excludes a large number of respondents. About two-thirds do not fall into the classifications listed below. Results for the remaining two-thirds are not reported in this breakdown, since their performance was similar to that for the nation.

[45] Y. Hochberg, "A sharper Bonferroni procedure for multiple tests of significance," *Biometrika* (1988), 75: 800-802.

ADVANTAGED URBAN COMMUNITIES. Students in this group attend schools in or around cities with a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.

DISADVANTAGED URBAN COMMUNITIES. Students in this group attend schools in or around cities with a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.

RURAL COMMUNITIES. Students in this group attend schools in areas with a population below 10,000 where many of the residents are farmers or farm workers.

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NATIONAL CENTER FOR EDUCATION STATISTICS

DATA SUMMARY

READING IN AND OUT OF SCHOOL

Findings from the 1990 Assessment
of Reading Achievement
from the
National Assessment of Educational Progress (NAEP)

Prepared by Eugene Owen
The National Center for Education Statistics
May 28, 1992

READING IN AND OUT OF SCHOOL

Introduction

This report, Reading In and Out of School, focuses on those background factors that are most closely related to reading instruction and reading performance, including instructional approaches, reading experiences, home influences, and demographic characteristics.

The data for these assessments were collected in the Spring of 1988 and 1990 from a nationally representative sample of approximately 13,000 students in 1988 and 25,000 students in 1990 at grades 4, 8, and 12 attending public and private schools. NAEP presents information on the performance of groups of students, not individuals.

This interim assessment is different from the trend data released in September and the 1992 reading assessment. The measure of achievement included in this report is students' average reading performance on a 0 to 500 scale that allows for direct comparisons across the grades and among subgroups of the population assessed. This scale, however, differs from the NAEP reading scale and descriptive anchor levels used to report trends in reading performance. Thus, the 1988 and 1990 data in this report are not comparable to the 1988 and 1990 reading results contained in the trend report.

Major Findings

The major findings of this assessment are:

- The amount of reading that students do for school and out of school is positively related to their reading achievement. Yet, students report relatively little reading in or out of school.
- Students who reported home environments that fostered reading had higher reading achievement.
- Despite extensive research suggesting that effective reading instruction includes moving from an emphasis on workbooks to combining reading and writing activities, schools are slow to make the transition, although there is some evidence from other sources that newer workbooks may include appropriate writing activities.
- Students are unable to provide details and arguments to support interpretations of what they read.
- The frequency of library use in 1990 appeared to decrease as grade level increased.

Research

There is a considerable body of research that shows relationships between certain behaviors and reading achievement. NAEP has collected data that allow us to compare current practice with these research findings. This report draws on that body of knowledge, but is not exhaustive. For example, this report does not contain information about teacher characteristics and training, or data about preschool and early reading experiences, or how students learned to read.

Research shows that children who read well come from homes with plenty of books, where everyone reads, and where parents encourage reading. Children who read well have parents who read aloud to them, talk to them about their ideas and experiences, limit their television time, and take an interest in their reading progress.

Research also shows that school activities that enhance reading ability include talking about reading, participating in a group project about reading, discussing new or difficult vocabulary, explaining the meaning of what has been read, and discussing different interpretations.

In the 1990 Reading Assessment, NAEP asked students about the kinds of activities they participated in related to reading. NAEP data show only relationships between behaviors or characteristics and performance at the same time, so they cannot be used to imply a causal relationship between such variables. If we see that students who participate in a recommended activity score low in performance, it may be that they are exposed to this activity more often in an effort to improve their performance. This interpretation is as reasonable as a conclusion that suggests frequent participation in this activity leads to high performance.

Research suggests the following home and school activities enhance learning to read:	**What NAEP found:**
• talking about what is read	A quarter of the 4th graders and one-fifth of the 8th graders report never talking about what they read in class. Students in the 8th grade who report talking about reading at least monthly, and those in 12th grade who report talking about their reading at least weekly had higher performance than other students in their grades. (Table 1.1, page 11)
• participating in a group activity or project about reading	Almost a fifth of the 12th graders, a quarter of the 8th graders, and more

	than a quarter of the 4th graders report never participating in a group activity. However, students at all three grades who reported daily group activities or projects had the lowest reading proficiency. (Table 1.1, page 11)
• discussing new or difficult vocabulary	Most students in 8th and 12th grade report doing this activity at least monthly. Eighth and 12th graders who report discussing new or difficult vocabulary at least monthly had higher reading proficiency than other students in their grades. (Table 1.1, page 11)
• explaining their understanding of what they have read	The vast majority of students at both 8th and 12th grades reported explaining their understandings of what they had read at least monthly. Students who reported doing this even a few times a year performed significantly better than those who never explained their understandings of what they had read. (Table 1.1, page 11)
• discussing different interpretations of what they have read	The majority of students at both 8th and 12th grade reported discussing different interpretations of what they had read at least once a year. Those who discussed different interpretations performed better than those who never did. (Table 1.1, page 11)
• writing about what has been read	Students at the 8th and 12th grade who wrote reports about what they have read on a moderate basis (weekly to a few times or once a year) performed better than those who never wrote reports or wrote them on a daily basis. (Table 1.2, page 13)
• reading outside of school	In 1990, more 8th and 12th graders (about 40 percent) reported reading out of school almost every day than those in

1988 (about 25 percent). On the other hand, more 4th graders in 1990 than in 1988 reported never reading outside of school. (Table 2.1, page 22)

- limiting television watching

One-quarter of the 4th grade students reported watching more than 6 hours of television a day in 1990. Almost two-thirds of the 8th graders reported watching more than 3 hours of television a day as did 40 percent of the 12th graders. As in past NAEP reports, students watching the least television a day (0-2 hours) had significantly higher reading scores than did students watching the most television. (Table 2.3, page 25)

- having access to books in the home

Although very few students reported having fewer than 25 books in the home (about 5 percent at each grade), their performance was significantly lower than other students. (Table 2.4, page 27)

- living in a home where others read

At both grades 8 and 12, those students (about half) who reported that adults in their home read a lot performed significantly better than those who reported that adults in their home read hardly ever or never. (Table 2.5, page 28)

- having reading assignments for homework

NAEP asked students how many pages they read each day for school and homework. In both 1988 and 1990, about one-quarter of the 4th graders and about one-third of the 8th and 12th graders reported reading 5 pages or less each day. Almost one-quarter of the 4th graders and less than one-fifth of the 8th and 12th graders reported reading more than 20 pages each day. Those students who reported reading more than 20 pages had higher proficiency than their

counterparts who read 5 or fewer pages. (Table 1.5, page 17)

- using the library

A fifth of the 8th graders and a quarter of the 12th graders reported never taking books out of the library. Another quarter of the 8th graders and over a third of the 12th graders reported using the library about once a year. (Table 3.5, page 36)

Demographics

NAEP typically reports performance for the nation as a whole and for demographic subgroups defined by race/ethnicity, region, and gender. Across grade levels, the results indicate few changes between 1988 and 1990 in students' reading achievement. Consistent with the findings of previous NAEP assessments, the results at all three grades showed that white students had higher proficiencies than their black and Hispanic counterparts; females outperformed males; and students from the Southeast in general had lower proficiencies than students in other regions of the country. These data are presented in Tables 4.1, 4.2, and 4.3 on pages 40, 41, and 43.

Constructed Response

Reading and writing activities often have as their goal improving the ability of the student to develop deeper meaning in what is read. Recent studies of the relationship between reading and writing support the idea that writing causes some students to be more reflective and evaluative.

In 1990, students were asked to read, think about what they read, and write responses to six questions. Because of the open-ended nature of the responses, scoring guides that ranged from "no interpretation" (or similar term) to "elaborated response" were developed. Three questions were based on stories, two were based on informational pieces, and one was based on a document. NAEP found:

- About 70 percent of the fourth graders were able to provide either minimally acceptable or vague responses to prompts based on two stories. More than half (59 percent) of the fourth graders were not able satisfactorily to complete a subscription form.

- About half of the eighth graders (45 percent) provided "incomplete" responses, and 18 percent provided "elaborated" responses to questions about an

informational piece. In response to questions about a story they read, over half of the 8th graders (54 percent) provided "unacceptable" responses and only one percent provided "elaborated" responses.

- For 12th graders, about a third gave "incomplete" (31 percent) or "unacceptable" (29 percent) answers to the same questions given to 8th graders. About one-quarter of the 12th graders provided "elaborated" responses to one item the 8th graders took, and 7 percent provided "elaborated" responses to the other item that was also given to the 8th graders. When asked questions about an informational piece not given to 8th graders, almost half of the 12th graders (45 percent) provided "vague" responses, and 6 percent provided "elaborated" responses.

These data are presented in Table 4.4, page 50; and examples of the scoring guides appear on pages 56 and 57.